FEBRUARY 11, 1933

Railway Age

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NEWSPAPER clippings received up to the present time show that the December 3 issue of the *Railway Age* has been quoted in newspapers with a combined circulation of 7,600,000—and additional clippings are still coming in.

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PHILADELPHIA

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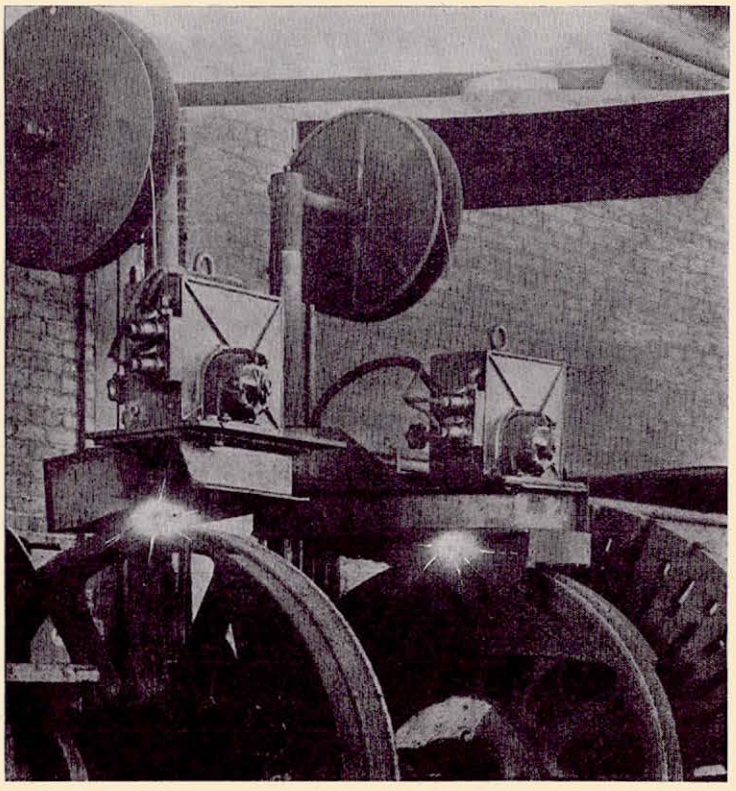

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The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.).

Subscriptions, including 52 regular weekly issues, payable in advance and postage free; United States and possessions, 1 year $6.00, 2 years $10.00; Canada, including duty, 1 year $8.00, 2 years $14.00; foreign countries, 1 year $8.00, 2 years $14.00.

Single copies, 25 cents each.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office.

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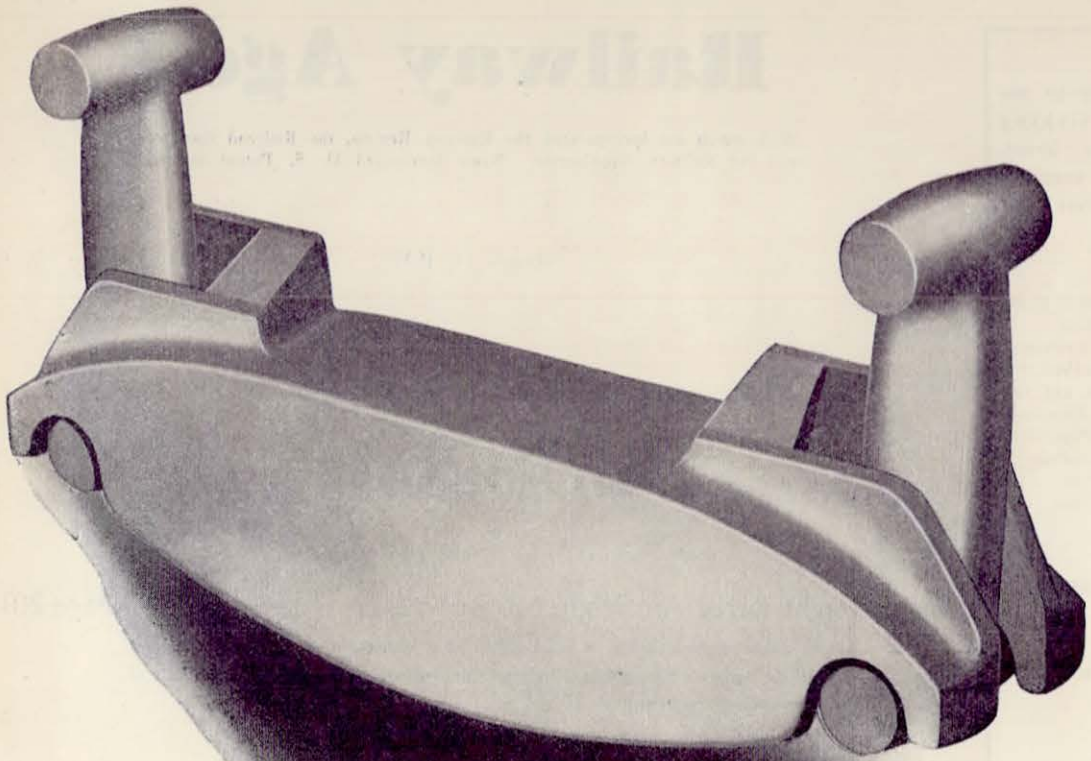

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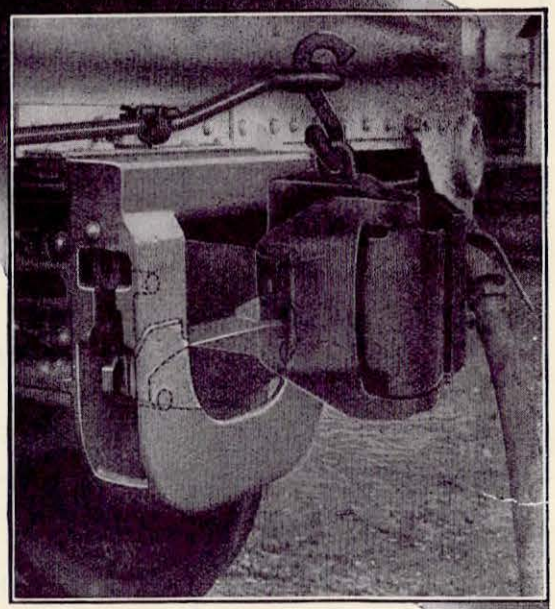

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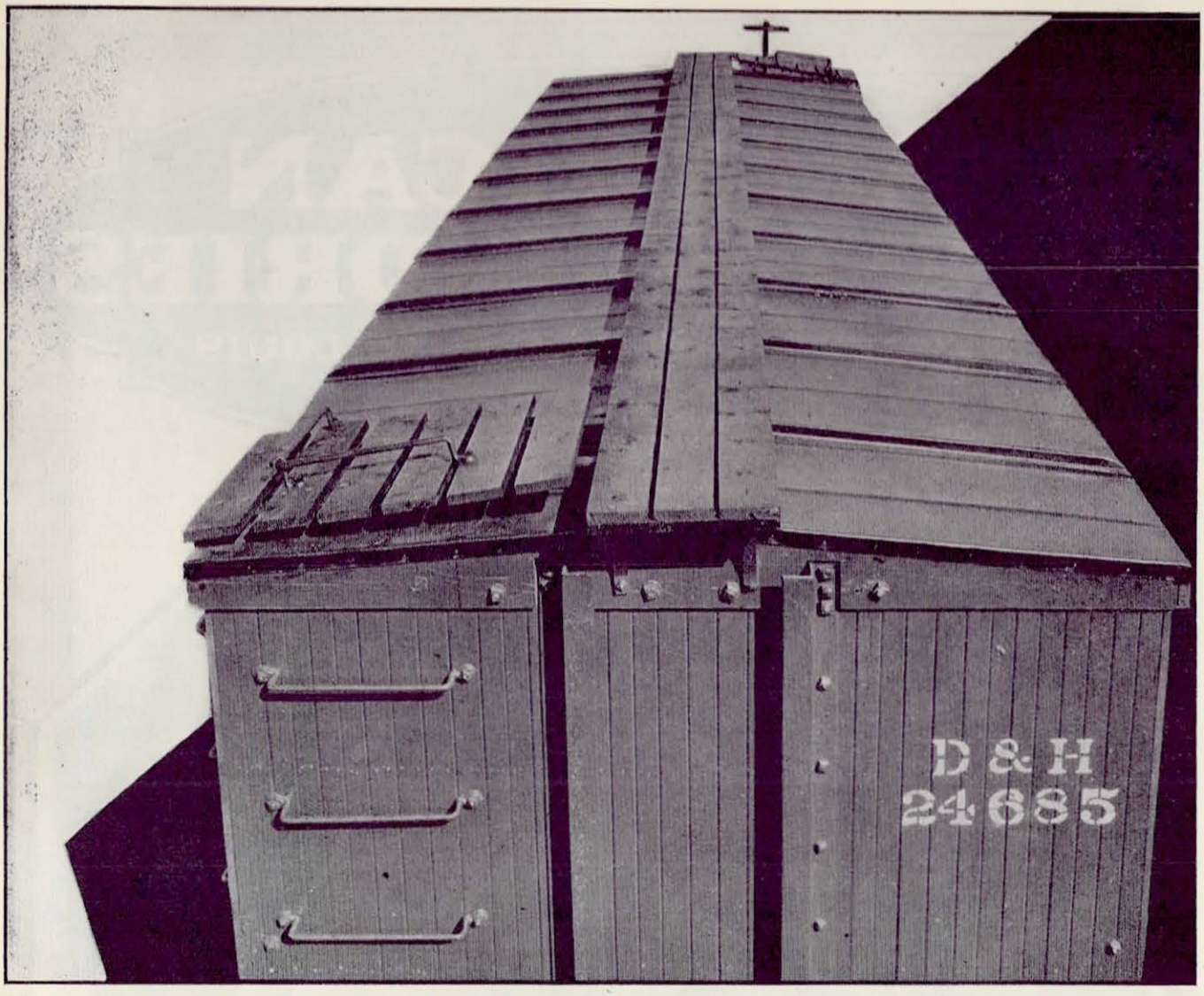

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RAILWAY AGE

Why Freight Rates Are High

Five organizations representing many shippers of basic commodities have petitioned the Interstate Commerce Commission for general reductions of rates on these commodities. The organizations are the American Farm Bureau Federation, the Farmers' Educational and Co-operative Union, the National Grange, the National Coal Association and the National Lumber Manufacturers' Association. The tone of their petition is friendly to the railways. It contains no such charges of over-capitalization, inefficiency in management and poor or inadequate service as always used to appear in petitions for reductions of rates. It declares that "rail transportation is of basic and fundamental importance to our national prosperity." The principal argument made for reductions of rates is that a wide disparity has developed between freight rates and the prices of basic commodities owing to the decline of the latter during the depression, and the data presented in support of this argument cannot easily be controverted. Nevertheless, there is much that can and must be said that is not said in this petition if any conclusion regarding freight rates is to be reached that will be fair to the railways and in the public interest.

The Past Trend of Freight Rates

It is hardly an exaggeration to say that the business men and farmers of the United States, and law makers and other public officials, have been doing almost all they could for many years to make it inevitable that railway freight rates should become and remain high.

The railways derive their earnings from mail, express, passengers and freight. One of the most important factors that determine the rates they must charge is the volume of all kinds of traffic that they handle. During the first three-fourths of the century of railroad development and operation that has passed the trend of rates, as measured by commodity prices and other standards, was downward. This almost uninterrupted reduction of rates was made possible by great economies in operation which would have been impossible without the almost uninterrupted expansion of the volume of all kinds of traffic. Average freight revenue per ton-mile reached the lowest point in history as recently as in 1916, although commodity prices had then been steadily advancing for ten years and averaged almost twice as high as in 1896. Average revenue per ton-mile in 1916 was 7.07 mills, and the railways in that year earned the largest percentage of return in history upon their investment. Average revenue per ton per mile in 1932 was 1.050 cents, or almost 49 per cent higher than in 1916, and the railways earned the smallest percentage of return on their investment in history.

These figures may seem to support the view that low freight rates tend to cause railway prosperity, and that therefore freight rates should now be reduced; but let us consider some of the developments that occurred between 1916 and 1932 and which have radically changed the problem of determining the freight rates that the railways need.

Increase in Labor Costs

The number of tons of freight carried one mile by the railways in 1916 was about 362,500,000,000, and in 1932 about 233,500,000,000. The number of passengers carried one mile in 1916 was about 34,600,000,000, and in 1932 about 16,800,000,000. Total *traffic units* in 1916, arrived at by considering each passenger-mile equivalent to three ton-miles, were about 466,000,000,000, and in 1932 about 284,000,000,000, a decline of more than 39 per cent. In 1916 the railways employed 1,647,100 persons an average of 3,151 hours, and paid them total wages of $1,469,000,000, or an average of 28.3 cents per hour. In 1932 they employed about 1,030,000 persons an average of 2,311 hours, and paid them total wages of about $1,500,000,000, or an average of 63 cents an hour. In other words, although the railways handled almost 40 per cent less traffic in 1932 than in 1916, and employed about 617,000 fewer persons who worked an average of 27 per cent fewer hours,

the total amount of wages paid by them was greater in 1932 than in 1916.

Having produced 33 per cent more units of transportation per employee-hour in 1932 than in 1916, the railways and their employees cannot be charged with having failed to increase their efficiency. The explanation of the greater amount of wages paid in 1932 than in 1916 is to be found entirely in the fact that the average wage paid per hour in 1932 was about 123 per cent greater than in 1916. The result of this increase in the average wage per hour was that, in spite of the 33 per cent increase made in efficiency in the use of labor, it cost 31.5 cents in wages to handle 100 units of traffic in 1916 and 52.8 cents in 1932, an increase in labor unit costs of 68 per cent. This increase in labor costs is obviously one of the most important reasons why, with freight rates 49 per cent higher in 1932 than in 1916, the railways became virtually bankrupt.

Taxes and Reduced Traffic Volume

The taxes of the railways in 1916 were $157,000,000 and in 1932 about $280,000,000. In other words, in spite of a decline of almost 40 per cent in their traffic, they had an increase of about 80 per cent in taxes. Here, obviously, is another reason why higher freight rates than in 1916 are required.

Even more significant and important in relation to freight rates than the increases in labor costs and taxes is the fact that railway traffic in 1932 was almost 40 per cent less than in 1916, when freight rates reached their lowest level. Never in all previous railway history was there a decline of traffic remotely comparable with this.

It made gross earnings less in 1932 than in 1916 in spite of much higher freight rates. As it was the almost uninterrupted increase in the volume of their traffic that so largely made it possible for the railways to stand the steady decline of their rates before the Great War, it is obviously necessary, in any rational consideration of what rates they will require in future, to inquire why the volume of their traffic has declined to its present low level, and as to the extent to which it is likely to increase in future. Railway freight business increased 443 per cent in the 30 years ending with 1920, and only 9 per cent in the 9 years ending with 1929. Railway passenger business increased 300 per cent in the 30 years ending with 1920 and declined 34 per cent in the 9 years ending with 1929. Freight business declined 48 per cent between 1929 and 1932, and passenger business declined 46 per cent.

Why Traffic Volume Has Declined

The developments that have occurred both prior to and since 1929 prove beyond question that the low level to which the volume of railway traffic has declined during the depression has been due only partly to the depression. An influence of vital importance, the effects of which were largely concealed before the depression, has been the competition with the railways which the national and state governments have fostered by subsidizing unregulated transportation by mail, air, water and highway. The Interstate Commerce Commission's policy of fixing railway freight rates on a distance basis, in the absence of such competition, would have retarded the growth of railway traffic, and has further retarded it because of the increase of unregulated competition. The commission's persistent refusal to let the railways make rates to meet water competition, especially on the Pacific coast, has diverted a very large amount of traffic from them. Subsidized and unregulated trucks using the highways handled freight in 1932 which, if it had been handled by the railways, apparently would have yielded them 500 to 600 million dollars of freight revenues. The decline of $415,000,000 in annual railway passenger earnings between 1920 and 1929, and of over $913,000,000 between 1920 and 1932, was mainly due to the diversion of traffic to the highways.

For many years the public has constantly been warned that its policy of diverting traffic to other carriers by subsidizing them without regulating them while regulating the railways without subsidizing them, would, if continued, so reduce the volume of railway traffic as to force the railways, if they were to remain in existence, to charge much higher rates than would otherwise be necessary. Now, with the railways handling about 40 per cent less traffic than in 1916, the Interstate Commerce Commission has been petitioned for a general reduction of rates on basic commodities upon the ground that these commodities cannot bear present rates. Where have the shippers of these commodities been during the years when the railways have been struggling to secure a reversal of the government policies which, by aiding to divert the cream of their traffic from them, have plainly tended to make it necessary to charge high rates upon basic commodities? Wherever they have been, they have been doing little or nothing to aid the railways in the struggle to make possible low rates on basic commodities.

How to Get Lower Freight Rates

The principal reasons why present freight rates are necessary to prevent utter bankruptcy of the railroads and destruction of railway service are: (1) Labor costs almost 70 per cent higher per unit of traffic than in 1916, when the average railway freight rate was the lowest in history; (2) taxes 80 per cent higher in 1932 than in 1916; (3) a volume of railway traffic 40 per cent smaller than in 1916, partly owing to the depression and partly to the diversion of vast amounts of mail, express, passenger and freight traffic to subsidized and unregulated carriers on the highways, the waterways, and in the air.

The petitioners for a reduction of railway freight rates are right when they say that present rates are too high in proportion to the present and prospective prices of basic commodities and that their reduction would tend to increase the volume of railway business. They

are wrong, however, when they contend that a reduction of freight rates alone would cause an increase in freight traffic and revenues sufficient to compensate the railways for the loss of freight revenues that would be caused by the reduction of rates. To make it possible for the railways to stand substantial reductions of freight rates and maintain their service their labor costs and taxes must be reduced, and the volume of their traffic must be increased, not only by a revival of general business, but by a reduction of the cutthroat and destructive government-aided competition to which they are being subjected.

As long as farmers, coal mine operators, lumber manufacturers and other producers and shippers are willing to add to their transportation costs by taxing themselves, the railways and other business interests and persons to subsidize carriers by air, water and highway, and thereby divert traffic from the railways, they ought not, in all reason and conscience, to complain much about the high railway rates that the government policies they tolerate, and even favor, help to make necessary.

Archaic Strategy of the Railway Unions

The principal source of unemployment among railroad workers, aside from the general depression in business, is the competition they are meeting from transport employees whose wages are a mere fraction of those they receive and whose working conditions are much less favorable. A recent study of the inland waterways discloses the fact that wages paid to employees in this service are, on an annual basis, about half those of the average railway employee. Similar statistics are not available for highway transport, but indications are plentiful that its employees work even longer hours and are paid less than those in service on inland waterway lines—their average standards being even less than half as advantageous as those of rail transportation workers.

To meet the problem thus facing its members, one would think that the logical course of organized railway labor would be to encourage the organization of other transport workers and to endeavor by legislation or otherwise to bring them up to the standards of railway employment. Perhaps some half-hearted effort in this direction has been exerted by the railway union leaders, but if so it certainly is not their main line of endeavor.

On the contrary, their principal effort has been put forth toward securing more and more restrictions in railway working conditions, which could serve only to widen the disparity between them and other transport workers, further handicapping the railways and diverting traffic from them to the highways and the rivers, and depriving more railroad employees of their jobs. A glaring example of this foolhardy strategy is the federal "full-crew" bill, on which the unions testified before the House Committee on Interstate Commerce recently. The railways have been operating self-propelled rail cars, under present rules, with two or three men in the endeavor to meet bus and truck competition, on which vehicles one-man operation is the rule. If the railway unions were seeking to require buses and trucks to carry crews of a number equal to those of rail motor cars, that would be understandable. But no, what they are seeking in this bill is to require a crew of four or five men to operate each rail car.

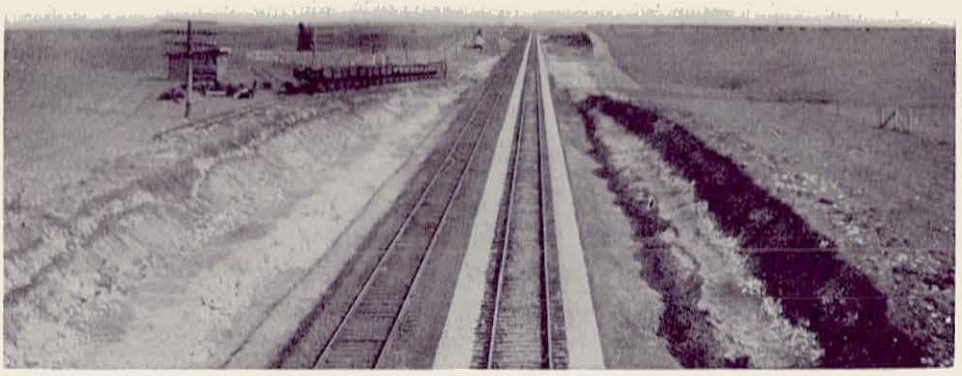
At a time when reductions in railway rates are essential to meet those charged by highway operators who, compared with railway standards, grossly underpay and overwork their employees, the railway unions are seeking to require two brakemen for freight trains under 50 cars and three for those of more than 50 cars.

The purpose of this legislation is, of course, to increase employment of railway workers. And yet, with cut-throat competition meeting the railways on every hand, it ought to be evident to anyone that conditions which artificially increase the disparity between labor costs on the railways as compared with their competitors will have precisely the opposite effect.

Prior to a decade or so ago, when the railways had more or less of a monopoly of inland transportation, the tactics the unions are now following were highly successful. The cost of any advantage gained either by legislation or otherwise was passed along to the shipper who had no choice but to pay it. Now, however, he no longer has to do so—and, in fact, refuses to do so. He simply diverts his traffic to a form of transportation with lower labor costs. The ability to consummate an advantageous bargain is of no use unless it includes the ability to make the advantages of the bargain "stick." Under monopoly conditions the railway unions were able to make their victories "stick." The power to secure more favorable conditions of employment is now fruitless and will remain so unless and until the railway unions can bring other transport workers up to their standards, and unless thenceforth, in presenting demands for higher wages and more favorable conditions of employment to the railways, they are joined by other transport workers in similar demands upon their employers.

Indexes to Volume 93

The indexes to the latest volume of the *Railway Age*, July to December, 1932, are now ready for distribution. Subscribers who desire copies should advise the New York office, 30 Church street.



One of the Line Diversions Between Osage City and Council Grove. The Surface Layer of Flint Can be Seen at Left

Missouri Pacific Improves Main Stem in Kansas

Completion of three-year construction program costing $6,500,000 permits faster schedules with heavier train loading

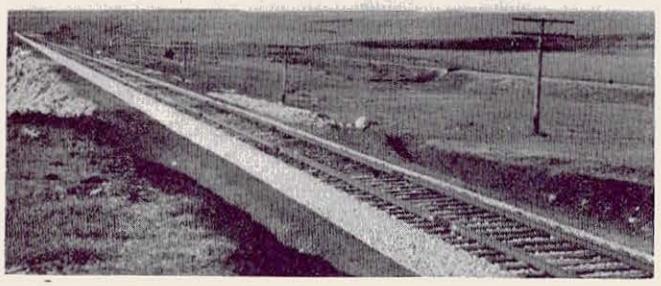
IN 1932, the Missouri Pacific brought to a conclusion an important line and grade revision program on 225 miles of its Central Kansas division, between Osawatomie, Kan., and Hoisington, which had been prosecuted for three years at a cost of approximately $6,500,000. The completion of this program, which was undertaken primarily for the purpose of reducing grades, has enabled this road to make a marked reduction in schedules for perishable and other important commodities between Pueblo, Colo., and Kansas City, Mo. It has also permitted the operation of heavier trains which now handle uniform tonnage between Pueblo and Osawatomie.

Grade and Curvature Reductions

In addition to or in connection with the major purpose of reducing grades from a maximum of 1½ per cent in both directions to a maximum of 0.7 per cent eastbound and 1 per cent westbound, many line changes were made. The most important of these involved 17 miles of new line and a departure of about 2 miles from the old road, while others varied from a few hundred feet in length to 9 miles, with deviations from the old line up to 1 mile. Maximum curvature was reduced from 6 deg. to 2 deg. 30 min., although only a relatively few curves reach this maximum, most of them being 2 deg. or less. Curvature was eliminated wherever practicable, with the result that the total central angle over the territory affected by the improvement was diminished from 2,714 deg. to 1,650 deg.

At five points in the territory where grades were revised, the roadbed was also raised above high water to insure dependable operation in the event of floods. While this work was done in connection with the improvement under consideration, it was in reality part of a larger program of dependable main-line construction, which was described in the *Railway Age* for April 23, 1932.

An important feature of the work was the extensive use that was made of concrete in the construction of bridges and culverts and the novel designs that were adopted for the former. As an indication of the magnitude of the project, it was necessary to move 3,756,000 cu. yd. of material in grading, of which 1,068,000 cu. yd. was solid rock, 432,000 cu. yd. was loose rock and 2,256,000 cu. yd. was common or earth excavation.



An Offset Line with the Old Line in the Background

Character of Topography

In general, the state of Kansas slopes from the northwest corner to the southeast. West of Hoisington, there are no large streams between the Arkansas river on the south and the Smoky Hill river to the north. Both of these streams flow almost due east, and in this section have only minor north and south tributaries. The line of the Missouri Pacific west of Hoisington lies about midway between these two streams. It thus parallels the main drainage and crosses the tributary streams near their sources. For this reason, while the country is not flat over most of this distance, the line crosses no high ridges or deep valleys. Here the line had been constructed with excellent alinement and with grades of

0.7 per cent eastbound and substantially 1 per cent westbound, which cannot be improved within a cost that can be justified on economic grounds.

On the other hand, between Hoisington and Osawatomie, the direction of the drainage changes and the topography is more broken. There are numerous streams of consequence, all of which flow north to the Smoky Hill river or to the south or southeast, eventually reaching the Missouri or the Arkansas. Here the line crosses an almost continuous succession of high ridges and relatively deep, wide valleys. In this section, the curvature was sharp, reaching a maximum of 6 deg., and involved a relatively high percentage of the distance. Since the country was undeveloped at the time the line was built, construction costs were held to a minimum by the introduction of this curvature and of grades up to 1½ per cent. As a consequence, there was a substantial difference in the tonnage which could be hauled by similar locomotives east and west of Hoisington.

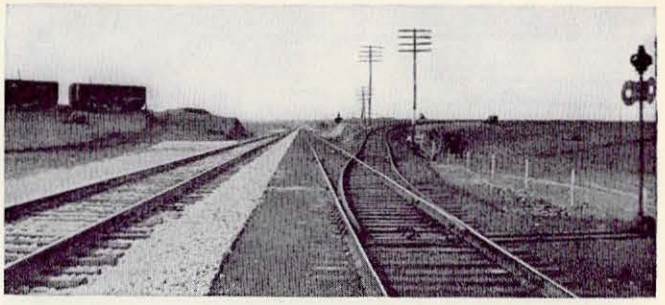
As traffic increased, and particularly as perishable traffic from California, Colorado and other western sections was developed, these conditions gave rise to difficulties which affected the cost of operation as well as the time required to move this important business. From the standpoints of both tonnage and schedules, therefore, it became imperative that these conditions be corrected.

Accordingly, studies were undertaken with a view first, to bringing the two sections of the line into balance from a tonnage standpoint and second, to developing the lowest gradients that could be justified economically. It soon became apparent that neither the existing traffic nor that which was probable for some years to come, would warrant the expenditure necessary to make a substantial reduction in the ruling gradients west of Hoisington. This being the case, no purpose would have been served by establishing lighter gradients over the remainder of the line to Osawatomie, since the full benefits from the added investment required to do so could not be realized while the tonnage ratings east and west of Hoisington remained out of balance. For these reasons, the existing maximum gradients west of Hoisington were adopted as the maxima east of that point to Osawatomie.

General Character of the Work

Between Osawatomie and Osage City, 53 miles, the country is fairly "easy." Although some of the grades exceeded the maximum, most of these were relatively short and no work of a major character was required to bring them to the established standard, and the alinement was satisfactory. In this section, therefore, grades were reduced on the original alinement, traffic being handled during construction on temporary detour tracks.

In certain sections west of Osage City where longer gradients were involved and improvement in alinement was generally desirable, but where radical line diversions were not necessary to accomplish these objectives, surveys had shown that offset lines could be constructed at a cost less than that of grade revision on the old alinement under traffic. This plan, which was followed wherever feasible, had several important advantages. It permitted the old line to remain in operation during construction, thus eliminating interference with train movements; a minimum of new right of way was needed in this highly-developed agricultural territory; and, in many instances, it facilitated a reduction in, or the complete elimination of, curvature. It should be understood that while these offset lines paralleled the general alinement, they did not follow the old alinement in detail.



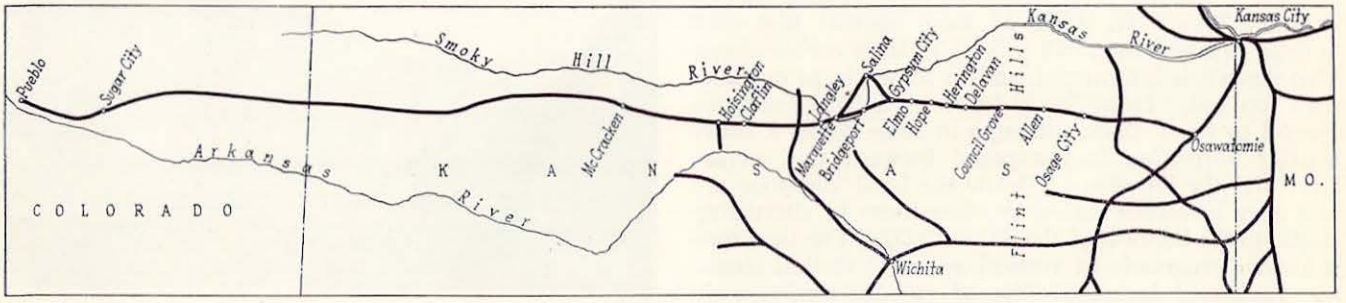
Temporary Connection at a Crossing of the Old and New Lines

At other places a complete diversion of the line became necessary to avoid unreasonably heavy work, to develop a satisfactory profile or to permit making the desired improvement in the alinement. As might be expected, the heaviest work occurred in those sections where the line diversions were made, although the offset lines contain many large fills and some deep cuts. In fact, with only a few exceptions, the grading was heavy over the entire distance between Osage City and Hoisington.

Sequence of the Various Construction Operations

Work between Osawatomie and Council Grove, which lay in four separate locations, was started in September, 1929, the lighter work in the two locations east of Osage City being completed early the following year. The more important work in the 38 miles between Osage City and Council Grove, which was the heaviest on the whole grade revision project, involved line diversions in two separate locations, 16 and 9 miles long, respectively. Traffic was turned over the shorter of these diversions at Miller on October 28, 1930, and over the longer 17-mile diversion between Allen and Council Grove on December 29, 1930. Work was also started in September, 1929, and completed during 1930 at four separate locations between Gypsum City and Hoisington, one of which, at Hallville, included a major line change of 4.3 miles. The cost of the work on this comprehensive program carried out in 1929 and 1930 was approximately $4,000,000.

Following the completion of these sections, the improvements between Council Grove and Gypsum City were started in 1931 and completed in 1932. In the 19 miles between Council Grove and Delavan, no grade



Missouri Pacific Lines in Central Kansas. The Improvement Extended from Osawatomie to Hoisington

A Grade Separation Between Delavan and Herington

revision was required, but in the 35 miles between Delavan and Gypsum City the work was continuously heavy except for short gaps through the towns of Herington, Hope and Elmo where it was found possible to retain the original location without exceeding the established grades and curvature. In this section there were three major diversions totaling 20 miles, and the remainder of the construction was carried out on offset lines.

East of Council Grove, the line crosses the flint hills of Kansas. This peculiar formation consists of a ridge which is relatively high and which extends at varying elevations nearly north and south from Southern Nebraska, across Kansas and a short distance into Oklahoma. It is flanked on the east and west by rough and broken country for a total width of 20 to 30 miles. These hills are pierced in a few places by the larger streams, but in general, the drainage parallels the main ridge. For these reasons, the original line across these hills, although it followed the most direct route through them, was very tortuous, since it had been located with a view of obtaining the maximum support in crossing the numerous minor watersheds and valleys.

New Alinement for 17 Miles

Beginning at Allen, located near the eastern boundary of the flint hills and extending through them to Council Grove, the line was diverted for 17 miles, the distance between the new and old lines being about 2 miles for much of this distance. While the original line was located on a nearly direct route between these points, the grades were heavy and the percentage of curved track was high. To have adhered closely to this location would have entailed a heavy expenditure, while the alinement would have remained unsatisfactory. With a view to securing the desired improvement in gradients and curvature at minimum cost and without material increase in distance, several alternate locations were studied. The line finally adopted as the most desirable lies south of the old line and is only slightly longer.

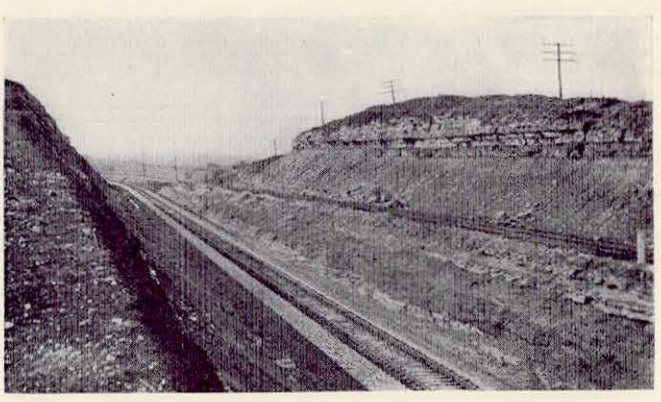
Through the flint hills the grading presented several unusual problems. The formation consists of a surface stratum, 2 to 4 ft. thick, of loose angular flint rock ranging in size from small pebbles to large cobble stones. This deposit is intermixed, and in some places overlaid, with top soil. Immediately below is a hard limestone from 2 to 15 ft. thick, although in some places a heavy boulder formation is interposed between the surface layer and the limestone. Below the hard limestone are soft gray limestone and shale, sometimes in alternating strata, to the bottoms of the deepest cuts. The limestone is broken irregularly by vertical or nearly vertical seams, and horizontal layers of flint of varying thickness up to 2 or 3 ft. and interposed in and between the limestone strata. On account of this broken character of the formation the cuts on the new line through the flint hills were quite generally opened on slopes of one to one instead of the steeper slopes customary in ordinary rock excavation. These flatter slopes have reduced to a minimum the raveling that always takes place in formations of this kind, especially in the layers of shale, and the maintenance expense for ditch cleaning in these cuts has been unusually low.

Drilling Was Difficult

While the soft limestone offered no obstacle to drilling and coal augers proved effective in the shale, the hard limestone was quite resistant to the drills and the flint was extremely so. Although the limestone was broken by many vertical seams, very few shots were lost. Generally, the formation "shot hard," but the average requirement of gelatine per cubic yard of rock and shale broken was not unusual.

From Delavan the line drops sharply for 7.3 miles to Herington, which lies in the valley of a tributary to Lyons creek. Between these points the line was relocated for 6.1 miles, the first two miles being little more than an offset line, while for the remaining distance the divergence was more than one-half mile. Immediately west of Herington to Hope, more than 6 miles, the new line is consistently about ¾ mile north of the old line, crossing Lyons creek about 3 miles west of Herington. West of Hope the third major diversion extended 7 miles to a point near Elmo, the distance between the old road and the new line varying from a few hundred feet east of Swayne to more than a half mile at the maximum. Two forks of Turkey creek were crossed a mile west of Swayne. From Elmo to Gypsum City, 9.5 miles, the construction was carried out on an offset line which crossed the old line twice.

At Hallville, 8 miles west of Gypsum City, the line descends into the valley of the Smoky Hill river, in which it lies for 19 miles, crossing this stream at Bridgeport and again west of Marquette. At Hallville a line diversion 4.3 miles long was constructed to reduce the heavy eastbound gradient on the ascent from the valley. At Fremont, between the two river crossings, the line crosses an abrupt north and south ridge where the heavy eastward grade was reduced to the established maximum on the old alinement. On the longer climb out of this valley west of Marquette the westbound grades were not heavy, but there was some objectionable curvature which was reduced or entirely eliminated in connection with the reduction of a troublesome eastbound grade at Langley on what was substantially an offset line. The only other work of magnitude between Gypsum City and Hoisington was west of Claflin, where the eastbound grade was reduced over the divide between Cow creek,



Cuts on the Offset Lines Were Often Deep

the first tributary of the Arkansas to be encountered and Cheyenne Bottoms east of Hoisington.

Between Gypsum City and Hoisington approximately 12 miles of construction was involved. As an indication of the relatively rough character of the country in this immediate section, which is a part of the great plains of Kansas and is generally pictured as flat prairie land, the total quantities moved in grading amounted to 674,000 cu. yd., or more than 56,000 cu. yd. to the mile. Of this total, 83,000 cu. yd. was solid rock and 19,000 cu. yd. loose rock.

Dependable Main-Line Work

At a number of places in the territory covered by this project considerable trouble had been experienced from high water. The points where this had occurred had been included in the dependable main-line program which has been mentioned, but the plans contemplated that the work would be done in connection with the grade reduction. The first of these was at Big John creek, an important tributary to the Neosho river, immediately east of Council Grove, where the old and the new lines come to a junction. Here the existing track was raised a maximum of 7 ft. under traffic for 0.43 mile, while that part of the grade of the new line which lies in the valley was constructed at a corresponding elevation. The second of these projects was at the crossing of the Neosho river immediately west of Council Grove where the track was raised and the embankment protected with rip rap.

Lyons creek, flowing to the north, is a tributary of the Smoky Hill river. It is one of the more important streams in the vicinity of Herington, and is subject to sudden rises up to 20 ft., which overflow the bottom lands to a width of 3,000 ft. In the past the track on the old line had been under water frequently and the conditions at this river crossing had been so troublesome that particular attention was given to the selection of the new alinement and grade across this valley to insure uninterrupted operation during any stage of water in the stream. The grade of the new track was laid 14 ft. above the highest known flood stage and a permanent bridge of steel spans on concrete piers was constructed. The embankment across the bottom of this stream contained 118,400 cu. yd. of material, of which 82,200 cu. yd. was borrow.

East and West Turkey creeks, two streams also flowing north to the Smoky Hill river, join a short distance below the new line to form Turkey creek. Their characteristics are similar to those of Lyons creek, but since they are crossed nearer to their headwaters, the floods are neither so violent nor so long continued.

As a part of the dependable main-line program, the new line across this valley was constructed well above high water. Owing to the proximity of the line to the junction of the two streams, it crossed the valley at a point where there is no dividing ridge between them. For this reason, while the embankment is not so high as at Lyons creek, the valley is about 4,500 ft. wide at the point of crossing, so that the two fills are comparable.

The Smoky Hill river is a characteristic plains stream subject to heavy and some times long continued floods, which in the past have frequently submerged the track at various locations within the 19 miles where the line lies in the valley between the crossings at Bridgeport and Marquette. Here was located the fifth and last of the dependable main-line projects which were carried out in connection with the grade reduction program. In these locations the track was raised and the embankment protected with rip-rap revetment.

A few ballast-deck creosoted timber trestles were used, but generally the trestles were constructed of concrete, an unusual basic design being used. In addition, innovations in design were employed for a number of other structures. These will be described in a later article.

In the 60 miles between Kansas City and Osawatomie on the line to Pueblo, trains operate by signal indication under complete automatic train control installed some years ago, and the improvements of the districts west of Osawatomie included the installation of automatic block signals of the latest type. The signaling east of Hoisington was installed in connection with the grade revision, but was extended west from that point into Pueblo as a part of a larger program of signal installation, which included 400 miles of line, except in the favorable plains territory between McCracken, Kan., and Sugar City, Colo., where local train movements are less frequent and where the visibility is unusually good.

The work was planned and executed under the direction of the late E. A. Hadley, chief engineer, and S. L. Wonson, assistant chief engineer. C. S. Sample, construction engineer, developed the plans and was in charge of the construction.

C. F. Ehrlich, locating engineer, located the diverted and offset lines, F. E. Bates, bridge engineer, designed the structures and supervised their construction. The design and installation of automatic block signals was in the charge of P. M. Gault, signal engineer.

Railroad Reorganization Bill

WASHINGTON, D. C.

QUESTIONS as to the extent to which new powers in the Interstate Commerce Commission shall be substituted for those of the courts in the guidance of railroad reorganization plans are complicating the discussion of legislation now pending in Congress designed to improve the machinery for dealing with insolvent railroads. A large part of official Washington, as well as of the group which will become official after March 4, seems to have made up its mind that a number of railroads must "go through the wringer," as the thought was expressed by Chairman Rayburn of the House committee on interstate and foreign commerce, but there are conflicting opinions as to who shall operate the laundry. Bills representing two schools of thought on the subject are now before the Senate judiciary committee, one introduced by Senator Hastings which was originally drafted by Solicitor General Thomas D. Thacher, and one referred to the committee after it was passed by the House on January 30. Many efforts are being made to bring about action in the Senate at this session, although the legislative record of that body so far this session does not appear to hold out favorable prospects.

The railroads themselves are anxious for some such legislation and it is understood that a number of them are planning to take advantage of it if enacted, although they have objections to the bill as passed by the House and prefer the plan of the Senate bill.

Avoidance of receiverships is one of the objects of both bills, although Commissioner Eastman has described the plan as one for substituting "a trusteeship which would in practical effect be very like a receivership but would probably arouse less apprehension," and while he stated that the effect would probably be to expedite reorganization, in comparison with the process under receivership, he added that "this is not certain."

The Interstate Commerce Commission, while not entirely satisfied with either of the bills, believes that

(*Continued on page 213*)

Bangor & Aroostook Finds Economy in Post Cards

WITH the increase in letter postage to three cents, the Bangor & Aroostook has resorted to the more extensive use of post-cards for correspondence, with the result that the saving of two cents per letter is only one of the economies which have been produced. What the Bangor & Aroostook does with the post-cards and how it does it are explained in the accompanying illustration, which is a facsimile of a post-card letter received from C. D. Baldwin, purchasing agent.

BANGOR AND AROOSTOOK RAILROAD COMPANY.
Bangor, Maine, December 16,1932.

Railway Age,
105 West Adams St., Chicago, Illinois.

Dear Sir:

Replying to yours of December 9.

In the interests of economy we have introduced the policy of handling much of our correspondence by using regulation postal cards,not only in the Purchasing Department but to a considerable extent in other departments of our Company. We have no difficult in taking two or three carbon copies so that our file record is complete. This practice saves time,labor, paper,envelopes and 2¢ in stamps and in the aggregate is saving us a considerable amount of money.

Yours truly C. D. Baldwin
Purchasing Agent.

CDB-T

Facsimile of Post-Card Letter Explaining Use in Business Correspondence

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended January 28 totalled 472,088 cars, a decrease of 24,346 cars as compared with the preceding week and of 88,255 cars as compared with the corresponding week of last year. For the first four weeks of 1933 the total is 1,910,496 cars, a decrease of 16 per cent as compared with that for four weeks of last year but this year's figures include a holiday not included in last year's. Loading of l.c.l. merchandise showed an increase of 469 cars over that for the week before but all commodity classifications showed reductions as compared with last year.

The summary for the week ending January 28, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

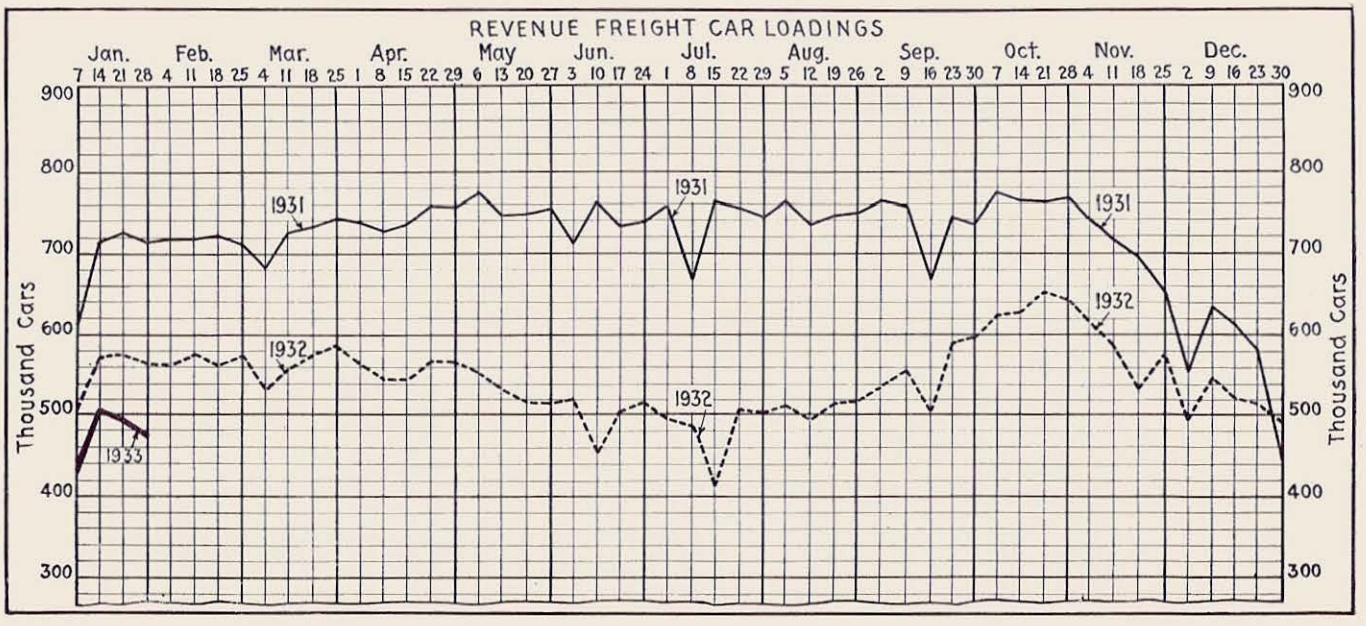
Week ended Saturday, January 28, 1933

Districts	1933	1932	1931
Eastern	108,417	128,111	163,040
Allegheny	88,266	111,441	149,057
Pocahontas	33,554	34,035	43,083
Southern	76,911	86,471	113,546
Northwestern	54,166	64,822	87,107
Central Western	67,900	88,320	106,817
Southwestern	42,874	47,143	56,747
Total Western Districts	164,940	200,285	250,671
Total All Roads	472,088	560,343	719,397
Commodities			
Grain and Grain Products	25,254	32,981	42,528
Live Stock	17,388	21,225	23,221
Coal	95,993	108,161	141,704
Coke	4,441	5,205	8,898
Forest Products	14,171	18,964	36,023
Ore	1,493	2,816	5,635
Mdse. L. C. L.	160,768	187,974	210,939
Miscellaneous	152,580	183,017	250,449
January 28	472,088	560,343	719,397
January 21	496,434	562,101	715,474
January 14	506,322	572,649	725,212
January 7	435,652	571,678	713,128
Cumulative total, 4 weeks	1,910,496	2,266,771	2,873,211

Car Loading in Canada

Car loadings in Canada for the week ended January 28 amounted to 31,437 cars, a decrease of 1,513 cars from the previous week's loadings, and the index number dropped from 58.44 to 56.60.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
January 28, 1933	31,437	17,474
January 21, 1933	32,950	17,984
January 14, 1933	32,626	17,070
January 30, 1932	41,105	20,492
Cumulative Totals for Canada:		
January 28, 1933	123,795	67,523
January 30, 1932	160,621	79,986
January 24, 1931	175,043	101,498



The Changing Freight Car*

Modern transportation requirements and the advent of truck competition are exerting a marked effect on the design of railroad rolling stock

By C. B. Peck
Mechanical Department Editor, Railway Age

FROM the time the steam locomotive first demonstrated its practicability, the technique of railway operation has been shaped by the ever-growing capacity of motive-power units which mechanical power has made possible. The type of equipment and the methods of operating American railroads have been determined by the predominance of the raw materials of industry and construction, such as coal, ore, sand and gravel, and the industrial products which have entered in vast quantities into the upbuilding of our capital structure.

In 1929, coal, iron ore, sand and gravel, products of the iron and steel industry, cement, brick and artificial stone, and lumber, representing 16 commodity classifications out of a total of 157 into which the Interstate Commerce Commission divides all commodities shipped in carload lots, accounted for over 57 per cent of the tonnage of all carload commodities, required 42 per cent of the carloadings, and furnished nearly 40 per cent of the revenue received from freight shipped in carload lots. Coal alone accounted for 34 per cent of the tonnage, 23 per cent of the carloadings, and 22 per cent of the revenue. The products of agriculture, and animals and animal products, including 64 commodity classifications, supplied only 11 per cent of the tonnage, 18 per cent of the demand for cars, and 21 per cent of the revenue—less than the revenue received from coal alone. Of the 64 commodity classifications in these latter two groups—which, incidentally, cover our prime necessities of food and clothing—the six classifications of grain alone account for more than one-third of the tonnage, slightly less than one-fifth of the car demand, and more than one-fifth of the revenue.

The cheap handling of bulk commodities has been the dominating factor influencing the evolution of both open-top and box cars and of operating practices, and these cars have grown steadily in capacity. In 1920, the average capacity of the box cars in service on the Class I railroads was 37.3 tons. In 1930, it was 41.5 tons. In 1920, the average capacity of open-top cars was 49.4 tons. This had increased to 53.9 tons in 1930. There are three reasons for this increase: First, the cost of switching movements in yards and at terminals is a function of the number of car units handled; second, the ratio of the net to the gross load of a fully loaded car is usually higher in the large capacity car; and, third, the train resistance in pounds per ton decreases materially as the gross weight per car increases.

Box Cars and Local Freight Stations

The box car was established in its present essential form long before mechanical labor-saving methods of handling materials were ever thought of and before the operations involved in bringing freight to and removing it from the railway right-of-way were considered as economic factors of transportation. It is the most universally used container of freight in railway service. In its most general form, it is designed to handle grain up to the full axle-load capacity. It serves as a container for a large number of agricultural and industrial products in carload lots, and until the advent of the demountable container it was the universal container for the movement of commodities in l. c. l. lots. The box car is closely allied to our system of freight houses, large and small, to which shipments in l. c. l. lots must be delivered, unloaded, weighed, handled from the warehouse into the car, and carefully stowed in order that they may be protected against the damage almost sure to result if they are carelessly loaded.

Only a small part of the car capacity can ordinarily be used for l. c. l. shipments between common loading and destination points. To keep down excessive car mileage, transfer platforms are located at strategic points, through which cars from a given territory must pass to be unloaded, their contents reclassified and reloaded for destination territories, in which, in some cases, the operation may be repeated before delivery is made to destination freight houses. Testimony of three railroads in the container-service hearings before the Interstate Commerce Commission in 1930 gave platform costs, for handling shipments of l. c. l. freight, of 7.8 cents and 11.55 cents per 100 lb., with clerical costs of 7.8 cents to 12.6 cents per 100 lb., and combined platform and clerical costs from 15.6 cents to 24.15 cents per 100 lb.

Why is a single type of car, the size and capacity of which are fixed by the requirements of a relatively small proportion of its service, used so generally for the movement of all commodities which require protection from the weather? There are several reasons. As the types of cars become specialized and multiplied, the variety of uses to which each may be put will be reduced. This means an increase in the number of cars required, an increase in empty car mileage, which is already large, and increased difficulties and complications in handling and accounting for the maintenance of cars in interchange. From operating and maintenance standpoints, the ideal equipment situation would be one in which all freight cars were of a single class and alike in all essential details.

Until after the World War these conditions of inflexibility, based on systematized mass movement, received little attention from either the shippers or the railroads. Operations on this basis had become thoroughly established. Freight trains were made up on the basis of a minimum of interference with continuous movement over divisions, and service to the local stations was performed by way-freight trains usually operating during daylight hours. Days lost in feeding into and out of the major road movement were accepted as a necessary part of the system.

Since that time, however, conditions have changed

* From a paper presented at the annual meeting of the American Society of Mechanical Engineers in New York on December 5.

rapidly. The railroads themselves, in a concerted campaign inaugurated by the American Railway Association in 1923, made great strides in reducing delays in transit, largely in the road movement, and in expediting deliveries. These improvements were a major factor in effecting a tremendous reduction in the amount of working capital tied up in goods in transit and an equally important reduction in inventories made possible by dependable scheduled deliveries. The railways themselves were therefore responsible for the first modification of the long-established seasonal buying habits which were so well adapted to the large carload and to the delays incidental to the marshaling of cars for movement in long, heavy trains. It is not surprising that, the advantages of the movement of merchandise in smaller quantities on more frequent orders once having been demonstrated, the motor truck on the highway has made heavy inroads into the merchandise traffic of the railroads in both carload and l. c. l. lots, because of its adaptability to the overnight delivery of merchandise in small units over distances as great as 300 miles.

Box Car Loadings

Of the 36,800,000 carload lots loaded in 1929, approximately 12,000,000 were in box cars. These box-car loads may be divided roughly into two groups. The first may be designated as tonnage commodities, such as grain, iron and steel products, metal ingots, cement, face brick, fertilizers, etc., of which there were about 4,000,000 carloads with an average load per car of about 37 tons. The second group includes light-weight bulky products of agriculture, animals, forests and manufactures, of which there were about 8,000,000 carloads, with an average load per car of about 21 tons. The carload in many of these cases is controlled by the cubic capacity of the car rather than its weight capacity, and the carload rates are applied on the basis of various specified minimum weights per carload. An additional 16,000,000 cars were loaded with merchandise in l. c. l. lots, the average load being not over 2½ tons. The total l. c. l. tonnage was but 2.8 per cent of the carload tonnage. In 1920 it was 4.3 per cent, and the average carload was about 5 tons.

It is in the l. c. l. traffic and the light-weight carload groups, which together represented 86 per cent of the total box-car loadings in 1929, that the railroads are suffering the greatest disability in meeting highway competition by their present methods. Carload minimums, based approximately on full use of the cubic capacity of the cars, are becoming too large for the decreasing commercial units which changing buying habits are establishing. A change from carload to l. c. l. lots not only involves an increase in rate, but also adds to the shipper's cost and inconvenience where he is required to deliver his goods to the railway freight house, thereby increasing the advantage of the highway competitor.

Deterrents to Change

The railways have not been slow to undertake the solution of the problem which has thus been created, but they are handicapped by a number of artificial conditions which cannot arbitrarily be overcome at once. Among these are the present freight classification and rate structure and the restrictions imposed by regulation.

Railway class rates are based on the value of the service, a theory which is still essentially sound in the handling of carload traffic. Unfortunately, however, when the railroads have ceased to be a monoply and must compete with other agencies and those agencies are free to make any arrangements with individual shippers as to the rates they shall charge for the service they render, successful competition demands that it be possible to fix rates within the zone of competition on a cost-of-service basis. Such a basis, in the case of l. c. l. rates, would imply a complete abandonment of the class rate structure. This already has some advocates among railway officers, and special rates which regard all l. c. l. commodities as a single class, having regard to the value of the service to the class as a whole, have already been placed in effect on more or less of a trial basis within limited territories on several railroads.

But the speed with which such changes can be made effective is not alone determined by the extent to which forward-looking railway officers are willing to experiment. The Interstate Commerce Commission has jurisdiction over rates and service on all interstate traffic, and the various state railway or public utility commissions on intra-state service. The basic consideration on which federal railway regulation was first set up was to prevent the railways, then regarded as a transportation monopoly, from discriminating either as between shippers or localities. Thus, until recently the Interstate Commerce Commission has not been inclined to encourage experimental changes in rates and service which, by their very nature, must be of limited application.

New Forms of Rolling Stock

In any discussion of the effect of new conditions on the future form of rolling stock it is necessary to keep in mind these deterrents to the free play of initiative. They are, however, only deterrents, and much progress has already been made in the experimental development

Major Carload Commodities in 1929

No. Classifications	Kind of Commodity	Tons, 000,000	Per Cent all c. l. Commodities	Carloads, 000,000	Per Cent all c. l. Commodities	Revenue, 000,000	Per Cent all c. l. Commodities
7	Iron and steel	63.4	....	1.80	....	$264.8	....
4	Cement, brick and art stone	42.2	....	1.13	....	109.3	....
1	Lumber	37.4	....	1.39	....	244.8	....
2	Coal	440.3	33.7	8.33	22.6	990.7	22.2
1	Iron ore	82.1	....	1.49	....	96.3	....
1	Gravel and sand	81.4	....	1.51	....	69.4	....
16	Total	746.8	57.2	15.45	42.0	$1,775.3	39.9
157	All c. l. commodities	1,303.0	100.0	36.82	100.0	$4,451.9	100.0
	L. c. l.	36.0	2.76	16.00	43.5	$514.7	11.5
42	Products of agriculture, group 1	115.3	....	4.69	....	$721.6	....
22	Animals and products, group 2	24.9	....	2.07	....	236.5	....
64	Total	140.2	10.7	6.76	18.4	$958.1	21.4
6	Grain	52.5	37.2*	1.32	19.6*	$209.6	21.8*

* These percentages refer to the total of products of agriculture and animals and products.

and use of new types of equipment, changes in operation, and simplification of the rate structure in order to cheapen and improve the service to the shipper.

First among these changes in equipment is the demountable container, of which several types are in service. The demountable container is essentially a means of providing five or six freight containers instead of a single container, on a single underframe. It breaks up the carload into several independent units, which may be collected and delivered intact with a minimum of platform expense, or its equivalent, to the railroad. The reduced mass of the unit load also provides additional protection against damage from shocks.

There are limitations to the extension of the service of containers of the type now most commonly in use, because in most cases crane service must be provided to transfer them between the road and the rail. The investment required to provide crane facilities limits their use to the larger stations. Furthermore, the substitution of containers for box cars in l. c. l. service requires the replacement of l. c. l. transfer platforms with transfer yards equipped with crane service. The crane time per container to perform the reclassification of containers by destination points places a definite limitation on the number of cars which can be handled through a single transfer yard without loss of a day in transit.

Another modification of the box car is the so-called compartment car, a number of which are in experimental service. In its simplest form this type of car is merely a box car in which the interior has been subdivided by substantial partitions into compartments. Each of these compartments may be used by a shipper under rates similar to the carload rates or on a flat container rate, with a minimum similar to a carload minimum but reduced in proportion to the number of compartments in the car. This scheme offers no improvement in the transfer between road and rail over the box car. It does, however, improve the ability of the contents to resist shock by subdividing the mass, and supplies the need for a smaller shipping unit.

Several railroads are providing a service to truckers which, in its physical features, does not differ essentially from demountable container service. Its difference lies in the fact that the container is not furnished by the railroad, and its owner (the trucker) becomes the public transportation agent. The railroad transfers the body from the truck chassis to the car and delivers it from the car to a truck chassis, charging a flat rate based on the container mileage without respect to the contents, except for restrictions against the loading of explosives, unusually fragile goods, etc.

Another scheme in limited use is a truck and trailer service which provides for the loading of the entire truck, or its trailer where used, on the railway car. This calls for loading and unloading ramps, the loading and unloading operations being performed by the trucks under their own power. Its use has not been sufficiently extended to indicate clearly its limitations, but it scarcely seems promising for large-scale operations.

These developments have been brought about in an endeavor to reduce shipping units below the size created by mass transportation tendencies and to find practicable means of co-ordinating road and rail service. They also indicate an effort to overcome the handicap of high terminal costs involved in freight-house and transfer-platform expense, clerical costs involved in billing and accounting, and terminal switching.

Another movement less generally affecting the railways has been brought about by exactly opposite conditions. This is the demand for special cars in which to ship certain dry bulk commodities customarily handled in box cars. The development of central concrete mixing plants has had much to do with the creation of this demand. So far, it has largely been met by the railroads on which cement shipments are originated by equipping hopper cars with roofs and modified hopper-door arrangements which permit the mechanical loading of cement through hatches in the roofs and its gravity unloading over suitable conveyor hoppers. All sacking and handling are thus eliminated. A special car of the tank type has also been developed which is equipped with a motor-driven unloading mechanism which offers possibilities for the movement of many dry products, including such high-grade materials as flour, where it is purchased in quantities for use at large bakeries.

These cars, however, are for use in the movement of bulk commodities, and each represents a specialized shipping problem. The big problem which is yet unsolved is the development of types of equipment adapted to the handling of that vast group of miscellaneous products which in 1929 called for the loading of 24,000,000 out of the 28,000,000 box cars loaded—the groups of commodities in which highway competition is making its greatest inroads.

The Fundamentals

In pointing out the advantages of motor trucks in performing a complete transportation service in this field, the question of the relative cost of the road movement by rail and on the highway has been disregarded. It is sufficient for the purpose here to point out that its ultimate settlement will exert a decided influence on the way in which road and rail transportation will ultimately be co-ordinated. Present indications lead to the belief that the settlement will be on a basis fair to the taxpayer, fair to the railroad, and fair to the user of motor vehicles.

Under that assumption, there will be a situation in which the fundamental conditions are as follows:

(1) Stripped to its essentials, the use of mechanical power in large units on modern tracks is the cheapest form of land mass movement.

(2) A complete rail transportation service, in the l.c.l. class and in the case of some carload traffic, involves road haulage.

(3) The economic co-ordination of road and rail service involves the use of the cheap rail haul with road collection and delivery service.

(4) The radius within which highway transportation will successfully compete with the railroad to secure the complete movement from shipper to consignee will depend upon the relative degree of flexibility of collection and delivery by highway or by rail and highway, on the cost of the transfer between road and rail, on the relative simplicity of packing requirements, and on the attractiveness of business relations involving the rate structure, settlements for loss and damage, etc.

At the present the railways are handicapped by their system of freight stations with high platform and clerical costs, by the inflexibility of a service organized essentially to fit the operating requirements of the mass movement of commodities in carload lots, by equipment designed to withstand shocks which are destructive to the lading unless expensively protected, and by an unattractive rate structure.

Two problems of equipment design are involved. One of these is strictly a problem of the railway industry; the other, in its broadest sense, is a problem of material handling. One railway problem is to eliminate the destructive effects of the current rough handling. The St. Louis Southwestern, in a move to meet truck competition in its territory, has inaugurated an overnight l. c. l. service between St. Louis and points as far south as Texarkana, Ark., and Shreveport, La. This

road is operating a train of 20 to 25 cars, which requires an overall schedule speed of 40 miles an hour. Other railroads are operating full tonnage trains on schedules approaching passenger-train speeds. Improvements in freight-car trucks are effecting great reductions in the vertical shocks which build up at certain critical speeds with the conventional spring arrangement. Improvement is needed in the cushioning of end shocks. This may require the adoption of passenger-car standards in cars used for certain merchandise shipments to be handled on passenger train schedules, if the rigid, costly packing requirements of the present l. c. l. classification are to be ameliorated.

Modern material-handling methods in the form of warehouse motor trucks and trailers, have already served the railways in the handling of l. c. l. freight. But this is not enough. The motor truck, once loaded, moves to its unloading point without further handling. When the rail link is interposed between motor truck hauls from the shipper at one end and to the consignee at the other, a complete rehandling at each end of the rail movement, no matter how efficiently it may be performed, limits the extent of the use of the low cost of haulage by mechanical power on rails. This should be eliminated to the fullest possible extent, and railway equipment will be changed in form, if necessary, to adapt it to the cheapest form of handling.

As the types of equipment are multiplied, the problem of empty car mileage will become more acute. So far as this affects the design, it will increase the pressure for lighter construction. This is already beginning to receive attention on the part of equipment designers. Any probable increase in expense from this cause, however, would be small in comparison with the reductions in expense which can be effected by the elimination of local freight houses with a co-ordinated road and rail service, in which the radius of the road movement is kept within the limit of its economic advantage, and such handling of freight as is necessary is concentrated at a few well-placed and well-equipped stations. The taxes on the high-priced land occupied by some local freight houses in city areas amount to more than the revenue they originate.

The solution of these problems requires the utmost ingenuity of the railroads which need and ultimately will use all of the practical assistance offered. Whether, and how, they are solved is not alone a matter of interest to the railways and competing highway-truck operators. The rate structure in America has been built up on the basis of the value of the service. Commodities of high value take a high class rate. Commodities such as coal, iron ore, and sand and gravel, and the low-priced tonnage products of industry, carry low rates which permit their movement over long distances to widely spread markets. Railroad losses of high rate merchandise, which produces large revenue relative to the cost of the service, jeopardize their ability to continue to transport the important raw materials and intermediate products of industry, low in value in relation to their weight and bulk, at the low rates which have been a large factor in making our industrial growth possible. How these problems are solved, therefore, will exert a profound influence on the future economic life of the United States.

WESTERN RAILROADS, on February 1, reduced the intermediate class passenger fare between Chicago and the Pacific coast from $65 to $50. A similar reduction applies to fares from St. Louis, Mo., Memphis, Tenn., New Orleans, La., Kansas City and Denver to the Pacific coast territory.

Shippers Say Surcharge Encourages Trucking

THE freight surcharge placed in effect upon certain commodities by the decision of the Interstate Commerce Commission in the 15 per cent freight rate case last year has caused much traffic to be diverted from the railways to the trucks, according to shippers testifying at a hearing before Commissioners Claude R. Porter and William E. Lee and Examiner G. H. Mattingly at Chicago on February 2-3. The railroads on December 10 filed a petition with the Interstate Commerce Commission, asking permission to continue the surcharges after March 31, with the provision that each road be permitted to retain its own excess charges instead of putting them in a pool to be loaned to needy railroads as at present. Their arguments were presented at a Washington hearing, which was followed by the Chicago hearing where grain, seed and food products representatives presented arguments to show why surcharges on certain products should be discontinued after March 31. At the Chicago hearing, Commissioner Porter announced that all briefs must be filed with the commission by February 16 and that the entire commission will hear oral arguments on February 17.

Frank B. Townsend of the Minneapolis Traffic Association testified in opposition to the surcharge on barley malt and other grain products. He contended that as a result of a surcharge of 20 cents a ton on feed, truckers of live stock into Minneapolis and St. Paul now return with loads of feed. He said that 46 per cent of the live stock shipped to the South St. Paul stockyards came by truck in 1932, the number of loads averaging about 600 a day, the maximum on one day being 1,083.

Similar testimony was presented by coal interests who contended that truck hauling from Illinois mines into St. Louis, Mo., has risen from 715,000 tons in 1929 to approximately 1,000,000 tons in 1932. According to a survey made by the National Coal Association, Indianapolis receives 1,150 tons a day by truck from Indiana mines, while 100,000 tons a month are delivered to Pittsburgh. Trucking into Denver during 1932 totaled 350,000 tons, or seven times the 1929 total.

Opposition to the surcharge on coal was concentrated upon lake cargo coal which moves from the mines to Lake Erie ports by rail, then by way of boat to the western docks and then by rail to the final destination. This coal bears the full emergency charge from the mines to Lake Erie ports of 6 cents per ton and upon the movement from the docks by way of rail to destination an additional emergency charge of 3 or 6 cents. A. B. Pratt, traffic manager of the Northern States Power Company, stated that his company, located at Minneapolis, was charged $17,382 on the coal it consumed because of the additional 6 cents applied from the dock to destination. He asked the commission to compel northwestern common carriers to stop the application of the 6 cents per ton emergency charge on the through movement of lake cargo or dock coal.

Throughout the testimony of representatives of grain and grain products interests, contentions were made to the effect that edible grain food products sold in packages and carrying a trade mark should not carry a surcharge if the same material shipped in bulk or as feed did not carry the emergency rate. In the carriers' rebuttal testimony presented by D. T. Lawrence, chairman of the Executive committee of the Western Classification Committee, and R. H. Sperry, assistant to the chairman of the Illinois Freight Association, it was shown that

the emergency charges were a result of the commission's order, the groups being taken from accounting classifications, and were not an attempt by the carriers to apply definite rules for rate making. The carriers' witnesses also showed that prepared breakfast foods, barley malt and such products were edible grain products classified according to the instructions on the package and, therefore, could bear the surcharge. These witnesses also contended that the surcharge on lake cargo coal from docks was not unreasonable and did not favor other mines.

Railroad Reorganization Bill

(*Continued from page 207*)

passed by the House is much to be preferred to the Senate bill, according to a letter addressed to Senator Hastings by Commissioner Eastman on behalf of the commission's legislative committee. This report, following one submitted earlier to the House judiciary committee, takes the position that, if it is deemed impracticable or inexpedient to deal more fundamentally with the problem, the House bill would effect changes in present procedure "which would be a considerable improvement from the standpoint of the public interest."

I. C. C. Sees Need for Prompt Action

The commission would prefer to see an attempt made to deal more fundamentally with this matter but realizes that the time is short, if anything is to be done at the present session, and says that the "need for action is urgent" and that unless economic conditions improve materially and rapidly a considerable number of railroads will find it necessary to accomplish a financial reorganization "which will reduce their fixed charges and provide an opportunity for the issuance of new securities of assured value."

Either of the bills would afford advantages over present procedure, Commissioner Eastman said, but he also asserted that neither does anything to correct the present situation so far as the selection of reorganization managers and committees is concerned and that "a thorough-going reform of reorganization procedure in the public interest would entrust the working out of an equitable and effective reorganization from the beginning to some well-informed, well-equipped and disinterested branch of the public service, just as has been done to a considerable extent in the case of banks and insurance companies. This could be done through a special court created for this single purpose, or through a special department of the commission likewise created for the purpose." The commission, he said, "has no ambition to have further duties with respect to reorganization plans, realizing that very difficult questions are involved and that the work is likely to be thankless," but he added that the commission has greater acquaintance with railroad affairs than any court or other public body possesses, and it also has the assistance of a staff of accounting and financial experts.

"The legislation which you are considering is, in short, hybrid legislation," Commissioner Eastman said. "It recognizes the evils in the present system of reorganizing railroads, but instead of dealing with these evils at the source, it attempts to correct them by means of coordinate regulation. The commission is to act as a corrective of possible errors of a pre-occupied and perhaps inexperienced court, and together they are to watch and supervise, with the aid of trustees, the process of formulating and procuring agreement to a plan of reorganization."

Regarding the need for legislation the report said that railroad receiverships and the reorganizations which follow them have been severely criticized, "chiefly because of the great incidental expense which they have involved, the continued domination of the property by the interests which may have been in part responsible for its financial troubles, failure to deal fairly with the interests of the various classes of security holders, and failure to accomplish a reorganization which sufficiently protects the financial future of the property. These are not criticisms which have universal application, but they have been merited in enough cases so that the situation is very serious."

Advantages of the Bills

Among advantages over present procedure which the two bills have in common, the commissioners find the following:

"These bills would substitute a trusteeship, which would in practical effect be very like a receivership but would probably arouse less apprehension.

"Creditors and stockholders would have a better opportunity to be heard in regard to the appointment of the trustees than they now have to be heard with respect to the appointment of receivers, due to the provision for a temporary appointment to be followed, after 30 days and a hearing, by a permanent appointment.

"The opportunity of creditors and stockholders to suggest and have considered a plan of reorganization different from that proposed by the reorganization managers would probably be somewhat better than at present, due to the fact that such an opportunity is provided for specifically in the bills.

"Since the bills provide that the plan when adopted shall be binding upon dissenting stockholders and unsecured creditors of any class which has accepted the plan (the House bill extends this to secured creditors also), it is possible that reorganization could be accomplished without a sale of the property.

"The effect of the bills would probably be to expedite reorganization, in comparison with the process under receivership, although this is not certain.

"Due to the specific authority given to the commission to fix at least a maximum for certain reorganization expenses, there would probably be a greater measure of control over these expenses than at present, although this is not certain.

"The commission would have more specific authority than at present to consider the equity of the plan, so far as the various classes of creditors and stockholders are concerned."

I. C. C. Criticizes Senate Bill

As compared with the Senate bill, in the opinion of the commissioners, the House bill also has the following further advantages:

"The commission....is not brought into the matter under the Senate bill until all negotiations over the plan have been concluded and it has been accepted (as the term is defined in the bill) by the creditors and stockholders. The commission would, therefore, be subject to the same embarrassment and difficulty under which it now labors in considering security issues in connection with railroad reorganizations following receiverships, namely, of being placed in a position where it must either approve, or by disapproving, compel another long process of negotiation over a new and different plan. Indeed the result might be to plunge the road into receivership, since the bill provides that the judge shall, if a plan

is proposed and accepted but not confirmed, 'dismiss the proceeding.' Moreover, it is doubtful whether, under the Senate bill, the commission has any final power over either the plan or over the issuance of securities and transfer of properties thereunder.

House Bill Provides for Hearings

"The House bill corrects this situation by providing for a public hearing, before any plan can be submitted to the security holders for acceptance, at which hearing the merits of the plan proposed by the reorganization managers and of any other plan which a group of creditors may propose shall be considered thoroughly. Thereafter the commission is to render a report recommending whatever plan it believes will be equitable, financially advisable, and in the public interest, together with its reasons therefor. Any subsequent action taken by the reorganization managers and the creditors and stockholders would, therefore, be taken with full knowledge and warning of the commission's attitude and with the advantage of its reasoning based on evidence of record. It should not be forgotten, in this connection, that the commission represents a most important interest which is not at all represented by the reorganization managers, the company, or its creditors and stockholders—namely, the public interest. It is highly desirable that this interest should be represented at an early stage in the proceedings, and not only at the very end after the plan has been submitted to and accepted by the security-holders."

Judge Thacher's Opinion

Thomas D. Thacher, solicitor general of the United States, has written a memorandum criticizing the House bill on the ground that it commits to the commission too many judicial determinations which should be made by the courts, saying that under it the plan evolved and approved by the commission is not transmitted to the court until it has been accepted by the requisite majorities of creditors and stockholders and until the commission has re-opened the proceeding and determined various questions. "Many of these questions," he said, "require judicial determination before a judge who has not already determined the questions presented for decision. It appears that the Interstate Commerce Commission, having itself determined in advance that the plan which it proposes is fair and equitable, shall thereafter hear and determine the rights of individual security holders who are entitled to come into a court and be heard upon a question already determined by the commission in their absence and before any opportunity has been afforded them to consider the provisions of the plan proposed and approved by the commission." Perhaps the most important function the commission will have to perform, he adds, is to take the lead in formulating a plan acceptable to two-thirds of the security holders of each class, and he describes this process as "one of conciliation not of adjudication" and, this being so "it is obviously improper to give the commission power to pass judgment upon questions directly affecting the property interests of the security holders which it must conciliate. The two functions should not be exercised by the commission.

"The creation of an impartial, disinterested, responsible agency which may lead and control the negotiations by which the requisite majorities of security holders may be brought into agreement upon the acceptance of a railroad reorganization plan approved by the commission will go very far toward solving the abuses which have been incident to railroad reorganizations in the past. The commission should have this power and in its exercise should have the widest powers of inquiry. It should be free to consider whether the plan is fair and equitable from the standpoint of the security holders and financially sound and desirable in the public interest.... The Interstate Commerce Commission should not be required to sit in judgment upon its own acts."

Business Needs Should Dictate Speed of Service

If railroads assessed extra charges for their high-speed freight services and, in connection with other freight operations, inaugurated sliding-scale rate reductions as incentives to heavier loading and greater utilization of car capacity, the resultant savings could, as traffic is restored, be distributed to the mutual advantage of carriers and shippers, said Milton W. Harrison, president of the Security Owners' Association, in his discussion of "The Railroad Problem" before the Newark (N. J.) Traffic Club on January 9. Mr. Harrison justified his suggestion by pointing to the added costs involved in operating high-speed freight trains and calling attention to the recognition of this cost factor in the extra fares charged on fast passenger trains and in the differential rates applied to circuitous routes. "Is it not practical," he asked, "to carry this idea to its logical conclusion?"

Mr. Harrison opened his address with a reference to the editorial entitled "Faster Freight Train Operation," which appeared in the *Railway Age* of December 31, 1932, and continued to his discussion of the costs involved in providing the expedited freight services and of the requirements of business for such services.

Let Expedited Traffic Pay for Service

"Should there not be provided just as fast service as the traffic really requires consistent with safety, but let such traffic pay the cost for high-speed?" he continued. "The government in July, 1932, paid about 29 times as much per ton-mile for the movement of mail by airplane as by rail.

"The average haul for carload traffic for the country as a whole is about 320 miles. The terminal-time constant has no direct relation to the transit-time, hence at an average speed of 10 miles per hour a transit-time of 32 hours is involved; at 35 miles per hour, transit-time would be a trifle over 9 hours, or a saving of 26 hours, practically one day. Whether this speed results in a net saving to shippers would depend upon the time of departure and arrival, and if a Sunday or holiday intervened.

"The Interstate Commerce Commission's estimated value of $54 per ton of freight carried by Class I railways in 1930, applied to the average of 35 tons per car makes an average value of $1,890 per car. Even though interest was computed on this sum a difference of a few hours would in no wise justify the increased cost to the carriers for the increased speed. An honest appraisal of the actual business requirements, exclusive of the competitive factor, would undoubtedly develop the fact that a very large proportion of the traffic now moving at the high speed could just as well accumulate in the train yards for movement in drag freight trains instead of resting in the bins or the warehouses of the freight receivers.

"This is especially true of coal, grain, sugar and many other staple commodities. In fact, in the recent sugar case before the Interstate Commerce Commission, waterway advocates pointed out the advantages of slow movement by water as influencing traffic their way because in some instances it reduced the cost of storage at destination. If the railroads made an extra charge for high-speed freight service and were permitted to hold all other freight for tonnage trains, experience should demonstrate the possibility of passing some of the resultant savings on to the public as soon as traffic was restored.

"For the past 12 years the average capacity of freight cars has increased more than 10 per cent while the average size of motor trucks has decreased slightly. Trade conditions have tended toward dealing in smaller units; with the increased size and weight of freight cars and decreased load per car, the carriers are annually hauling an increasingly larger proportion of tonnage for which they receive no direct compensation. Is it not practical, should present trade conditions warrant, to make a sliding scale rate on a minimum of 60,000 lb., to those shippers who might find it to their financial advantage to modify their usual methods, grant a percentage reduction if 70,000 lb. were loaded, and higher percentages for 80,000, 90,000 and 100,000 lb. respectively? By so applying this principle the roads could pass directly on to the shippers a portion of the substantial savings that should ensue from a greater utilization of the capacity of cars furnished."

Burlington Automatic Train Control Discontinued

THE order of December 5, issued by the Interstate Commerce Commission on the petition of the Chicago, Burlington & Quincy for relief from automatic train control orders, which was briefly noticed in the *Railway Age* of December 17, page 925, includes an abstract of much detailed testimony presented by the road and considered at hearings held by the commission. Following is an abstract of the report:

The system, that of the Sprague Safety Control and Signal Corporation, New York, is of the intermittent magnetic induction type, and was installed from Creston, Iowa, to the Missouri river on August 1, 1925, and thence to Lincoln, Neb., on July 18, 1926—total distance 162 miles, 91 locomotives. The total cost of installation, including locomotive equipment, was $337,641 and the cost of maintenance from July, 1927, to February, 1929, averaged $14,931 per annum. This cost is increasing because of aging of the device, and by the necessity of equipping a larger number of locomotives, because locomotives are now run through between Chicago and Lincoln, 551 miles. The road is considering plans to run engines between Chicago and Denver, 1034 miles. Modern locomotives cannot be economically confined to short runs; they must make long runs in order to accomplish satisfactory returns on the investment in them.

The apparatus has functioned reasonably well, and the company bases no claims on any defects in the apparatus. The Burlington never approved the use of automatic train control (although, says the report, it made no effort to contest the commission's order) but it has at all times endeavored to give the train-stop a thorough trial. The petition is primarily prompted by the severe financial straits in which the company finds itself. The falling off in business has resulted in great losses, and the reduction of train movements over this section of the road has brought the average down to 1,699 trains per month as compared with 2,276 trains in 1928. Discontinuing the operation of the train stop will save about $15,000 per annum, and the operating vice-president expressed to the commission his opinion that there would be no diminution of safety.

There is no record of any accident averted by this installation. Trainmen are required to report unusual occurrences and it was admitted that the apparatus may have functioned to prevent accidents, "for human nature is such that it is doubted if all enginemen over-running signal indications, but which do not result in accidents, would voluntarily report such oversight." For the 10½ years ending August 31, 1932, there were, in this territory, no deaths and only one injury from collisions; and this injury could not have been averted by the automatic train stop. The forestalling apparatus of the system would, of course, make enginemen more alert and, therefore, minimize the danger of accidents. Of 34 enginemen running on this territory, 28, when questioned by the superintendent of motive power, were in favor of removal of the device.

The company presented testimony to the effect that physical examinations of enginemen are now stricter than formerly, and more frequent; and the standards are somewhat higher. The rules are enforced by surprise tests and firemen are required to assist the engineman in watching the road and observing signal indications. With the increased use of automatic stokers firemen are better able to observe roadside signals. Speed recorders are maintained on the locomotives of the principal passenger trains.

Within the past 38 months the Burlington has installed centralized traffic control on 35 miles of line within this territory, at a cost of $207,367 and has put in automatic interlocking at Lincoln at a cost of $122,639. Since July 1, 1922, the Burlington has expended on signal improvements, other than the automatic train stop, $5,536,565. The result of these expenditures, it is claimed, has substantially lessened any need for the automatic train stop.

The signal engineer testified that in his judgment train operation in this territory, without the automatic train stop, will be as safe as at present; and the money which it requires would better be spent for highway crossing protection and the extension of centralized traffic control. The principal advantage of C. T. C. is that it increases safety; and it has an advantage over the automatic train stop in that the man in control can observe the extent to which enginemen disobey signal indications whereas with A. T. C. the officers may be in ignorance of such neglect or misconduct unless the engineman reports his own negligence, or he gets into trouble, or is detected by surprise tests. The centralized traffic control, therefore, should make enginemen more alert than when operating under the automatic train stop.

Therefore, in consideration of the changed conditions since 1922, the lower traffic density, the freedom from train accidents, the additional safety devices installed, the general increase in the ability of this line to handle traffic safely and efficiently, the indirect expense because of long locomotive runs, the large decrease in revenue, and the urgent need for the elimination of causes of accidents at other points, the commission finds that at the present time the conditions between Creston and Lincoln do not require the maintenance of the automatic train stop.

Commissioners Aitchison and Eastman dissent.

Communications . . .

Railway Patronage of Water Transportation

To the Editor:

I quote the following from a newspaper published in a Southern city:

ORDER 300,000 TIES

There is due to be a bull market for crossties in the ——— district, the ——— Railroad having placed orders for 300,000. The bulk of them will be shipped from this port. Already cargoes are being assembled on the docks.

It would seem that, with the amount of sob stuff the railroads are putting out about the amount of tonnage the trucks and waterways are taking away from them, they would at least patronize the rail lines with their own traffic. Three hundred thousand crossties would furnish considerable tonnage for three or four railroads.

Former Railroader.

B. & O. Passenger Traffic Practices

Baltimore, Md.

To the Editor:

I have just read the letter on page 22 of the January 7 number of the *Railway Age* entitled, "Would This Happen in a Bus Office?" I hardly need say that when I read such letters as the one referred to I feel ashamed of my profession.

I regret very much that the incident ever happened in a railroad office. I do not believe it would happen in an office of the Baltimore & Ohio Railroad Company. Our ticket agents at all points have instructions to sell and deliver, upon request, a ticket from any station to any other station on the Baltimore & Ohio lines, and furthermore, if the ticket called for is for a station off the line, they have instructions to immediately secure authority to furnish the ticket desired.

I dislike very much to think that the incident referred to by the writer of the letter quoted in the *Railway Age* is "a very fair sample of the attitude generally of the passenger departments of the railroads." I much prefer to think that although it did happen in this one particular case, that it was an exception to the general rule rather than the general practice. While I have stated what the practice is on the Baltimore & Ohio Railroad, I have no reason to suppose that our practice differs in any essential manner from the practice generally in vogue on all of the other rail lines.

Daniel Willard.

Highway Interests Purchase Newspapers

To the Editor:

I enclose an item* from a recent newspaper which, to me, is very significant. Not much more than a generation ago, railroads were accused of controlling newspapers, their news and editorial columns. Now we have the spectacle of one of the largest road contractors in the central states owning outright two or more daily newspapers.

Just a few days prior to the appearance of this item there appeared another item in which it was stated that more farmers in this state had lost their farms through excessive special levies for road improvement than through any other single cause. It was also stated that hundreds of farmers were bringing their deeds to county treasurers and offering to surrender their farms rather than pay the heavy assessments for road improvements that were of benefit to no one except intercity trucking companies. The counties in which these newspapers are located were especially mentioned.

In one of Joseph Conrad's novels one of his characters refers to the "fundamental imbecility of the human race." The attitude of the American people toward the railroads, the highways and the waterways demonstrates the existence of this universal mental condition beyond any doubt.

It requires no more than an average intellect to determine how much "freedom of the press" there will be in road-contractor-owned newspapers for the railroads, their employees, and the overtaxed farmer.

In conclusion I may add that I do not own, and never have owned a railroad security, and have never occupied a permanent position with any railroad.

Merrill M. Ross.

* The clipping enclosed announced the purchase of daily newspapers in two thriving Middle Western communities by a road-building contractor. —Editor.

"Political Nonsense"

Chicago.

To the Editor:

I enclose a photo (reproduced herewith) taken by myself last July which should have been in your December 3 issue. It shows Atchison, Topeka & Santa Fe No. 19, "The Chief", westbound just west of Lockport, Ill. That wall-like contraption in the distance to the left is the end of the lower lock of our magnificent "Illinois Deep Waterway", on which more than $27,000,000 has been expended to the end that Chicago may become one of the great world seaports.

I would point out that, whereas this is a great *natural* waterway which has been lying at our very doors unused all these years, the practical engineering problem has involved *five* separate

Mr. Collons Suggests That This Picture Carry the Caption "Reading Left to Right: From the Ridiculous to the Sublime" or "Political Nonsense vs. Practical Business Sense"

dams at various points along the route, and at this particular point in the picture, the water is held in great retaining walls 30 ft. above the river bed and 10 ft. above the surrounding land areas, in an effort to provide a channel to float barges in.

I would further point out that, whereas this project was designed to "extend and amplify the transportation system of our country and to relieve the restricted rail facilities at traffic centers," it is paralleled for parts of its length and at its principal traffic points by three of the finest railroads in the Middle West—Atchison, Topeka & Santa Fe; Chicago, Rock Island & Pacific, and Alton—not one of which has ever even remotely approached its traffic-capacity; and all three of which have, as a matter of fact, been put to great expense to reconstruct bridges and portions of their lines to meet the demands of "Navigation".

I would further point that the net result of all this will be that the people of the country will contribute the money it will cost to finish and operate this damned mess as a "dole" to the big shipping interests who will use the canal with their own fleets of tugs and barges, such as the big coal, oil and steel companies. Have any of our brainy politicians thought of that? Will not the earnings of these companies simply be swelled by this money that the taxpaying public is contributing to their transport costs? The public is too far removed from bulk-transportation costs to receive any tangible benefit.

R. E. Collons.

Odds and Ends . . .

Hero Dies

William D. Bowers, locomotive engineer on the Pennsylvania, who once wrecked his train in order to save the life of a child, died at Harrisburg, Pa., on December 13. While running a westbound train on June 29, 1925, he saw a child playing on the tracks, and he derailed 10 cars in bringing the train to a stop in time. The wreck is said to have cost the Pennsylvania $6,000, but the company commended Mr. Bowers.

Katy Celebrates Sixtieth Birthday

They had a pageant in Denison, Tex., on Christmas Day to celebrate the 60th anniversary of the operation of the first train ever to enter Texas from the North, over the rails of what is now the Missouri-Kansas-Texas. P. H. Tobin, 85 years of age, was at the throttle of a modern locomotive pulling the "Texas Special" of the Katy into Denison, over the same route he traveled 60 years ago as engineman of the first train.

Titled Engineman a Quick Thinker

Spain's titled locomotive engineer, the Duke of Zaragoza, recently avoided a serious mishap by quickly setting the emergency brakes of the Sud Express when the train ran into an open switch at Miranda Junction. The locomotive was derailed, but the sleeping cars were brought to a stop before they reached the switch. The duke, who is a member of one of Spain's leading families, has acquired quite a name as a locomotive engineer. He handled Queen Victoria's train out of Spain at the time of the revolution, and more recently he piloted the special train of President Zamora from Valencia to Madrid.

Busy Christmas in England

From all reports, the railways in Great Britain did a land-office passenger business over the Christmas holidays. The London & North Eastern kept more than 4,500 passenger locomotives and 13,000 coaches in constant use. Between the morning of December 23 and the evening of December 24, the Great Western operated 780 trains into and out of Paddington Station, London, 496 trains into and out of Bristol and 455 into and out of Birmingham. This road kept 80 dining cars in service, and the food with which the cars were supplied included 3,100 lb. of Christmas pudding, 4,000 mince pies, 300 lb. of turkeys and plenty of what the British railways nonchalantly refer to as "wines and spirits." The principal express trains on the London, Midland & Scottish were all run in at least two sections during the period immediately prior to Christmas, while a number of them ran in as many as six sections. This road had an especially heavy volume of express traffic, having carried between 2,000,000 and 3,000,000 parcels during the week before December 25. One of its London freight stations handled more than 2,000 tons of Christmas freight per day during the week. The Southern ran most of its trains to the seaside resorts in two sections both before and after Christmas, and also operated more than 100 special trains. It all sounds a lot like the so-called "good old days."

Casey Jones' Successor

According to the Memphis, Tenn., newspapers, the engineer who succeeded to the famed Casey Jones' run after the latter's death, retired the other day. He is H. A. Norton who was an engineman on the Illinois Central for 49 years, having handled a fast train on the Memphis-Canton, Miss., district—where Casey Jones gained his reputation—for 32 years. The story of Casey's "farewell trip to the Promised Land" will probably never grow old. As it is recalled to us, Casey, whose real name was John Luther Jones, was called before dawn on the morning of March 31, 1900, to take train No. 1 from Memphis to Canton and to get it there on time. Leaving Memphis he had a clear track and he lost no time in hitting his famous "cannon ball" speed. With the train well under way, he pulled the whistle cord for the first "Casey call" of the trip—three short blasts and then a long, low whine. Casey was pulling into Vaughn when his train hit an open switch and plowed into a freight car. Casey stayed with the engine, applying the brakes in emergency, and they found him later, scalded by steam and with a bolt from the wreckage in his neck. Norton, who recently retired, was sent to Vaughn to pick up Casey's train and take it on to Canton, and the run was his from that day on.

What It Takes to Make a Calendar

Apparently it is no simple matter to make one of those train pictures that some of the railroads reproduce on the calendars which they distribute among their favored customers. For instance, they say that Grif Teller, who does the striking artwork on the Pennsylvania calendars, goes to a great deal of trouble to get the right effects. If you see a man lying on the edge of a Pennsylvania embankment peering at the tracks, only inches away, at the very instant a heavy locomotive races toward him; or if you see a man leaning out of the cockpit of an airplane watching through goggles the stream of smoke from a locomotive speeding on the tracks beneath the ship; or if you see a man climbing all over a standing locomotive and studying it from every angle, it is likely to be Grif Teller. That is the way he learns how to make his paintings accurate in every detail.

Smokers Rebuffed

A few weeks ago, we reported in the news columns the distribution of a questionnaire by the Lackawanna to determine the views of suburban passengers in the matter of smoking on trains. The returns are all in now, and they seem to indicate that constant smoking hasn't the grip on the commuting public that many people thought it had. The Lackawanna questionnaire, which attracted an immense amount of publicity in eastern newspapers, makes quite a story. More than 50,000 ballots were distributed to passengers on inbound and outbound suburban trains. The passengers were asked to indicate whether they preferred to have continued the present practice of providing one smoking car on short trains and two smoking cars on long trains, or to have one car for non-smokers and to permit smoking in all other cars, or to permit smoking in all cars on the train. After voting, the passengers handed their ballots to the conductor or trainman.

The ballots started a storm of comment. Some commuters expressed the hope that the management would not permit themselves to be misguided by enthusiastic tobacco addicts because, they said, the latter can do comfortably without indulgence for the short time during which they are traveling on suburban trains. Another group was equally insistent that those who do not smoke fail to appreciate what they are missing, and hoped that the management would let smokers indulge where, as, if and when they pleased. One man invited attention to the fact that when the Lackawanna electrified its main suburban lines, the principal reason was to get rid of the smoke nuisance, while another wrote, "For God's sake, segregate your smokers and non-smokers." The business note was injected by others who declared that to permit smoking on all cars would have a detrimental effect on real estate prices, and another man went so far as to say that he was on the verge of buying a house in a suburb located on the Lackawanna but he was going to leave the deal open until decision was reached on the smoking question, for, said he, "If smoking is to be permitted in all cars in the future, I intend to exercise the prerogative of living in some other locality."

The final returns showed the non-smokers in a big majority. Of all ballots received, 76 per cent voted for the continuation of the present practice of providing one or two smoking cars on all trains. The alternative of having one car for non-smokers and of permitting smoking in all other cars won 16 per cent of the votes, while 8 per cent were in favor of permitting smoking in all cars on the trains. In compliance with the wishes of the overwhelming majority, the Lackawanna decided to continue the present practice.

NEWS

Higher Livestock Rates Unjustified, I. C. C. Holds

Says changed financial condition of western roads warrants no new finding in case

Although finding that "the evidence clearly establishes that financially the western-district carriers have retrograded since 1928," the Interstate Commerce Commission has announced the conclusion that such changed conditions do not warrant a finding that the rate levels prescribed by it for livestock traffic in the western district, as the result of its investigation under the Hoch-Smith resolution, are less than maximum reasonable rate levels, or, on the other hand, in excess of reasonable rate levels.

As briefly reported in last week's issue the commission made public on February 1 its report following a rehearing in the case, which had been re-opened for further evidence as to changed conditions since May, 1928, when the record was closed on which the original report and order, effective on January 25, 1932, was based. After affirming its prior findings, except as to certain special features of the case, the commission said that the railroads are facing truck competition which, with its ever-increasing length of hauls, is more and more absorbing the available traffic, and a livestock industry which as a whole is financially in a state of prostration. "Under these circumstances," it said, "a general increase in the level of the rates on livestock with its attendant effect of discouraging shipments by rail, is one of the last means to which respondents should have recourse in an endeavor to augment their revenues. Upon the record a number of means were suggested by which respondents could encourage the movement of rail shipments."

Some of the railroads contended that since a substantial portion of the short-haul traffic is now permanently lost to the trucks, that fact should be given recognition by including in the long-haul rates a greater rate of return than was formerly included, but the commission says that other conditions may offset this factor and that freight operating expenses were 8.6 per cent less in 1930 than in 1927.

The commission also asserted that a traffic test showed that application of the rates found reasonable in western trunk line and southwestern territories would have netted the carriers an increase of 5.11 per cent but that under the rates actually maintained the increase amounts to but 2.29 per cent; and that under the rates found reasonable for Mountain-Pacific territory the reduction would have aggregated 5.18 per cent but that the roads published rates which made the reduction 5.43 per cent.

Another point made was that the financial needs of the carriers are due "in no small measure to the staggering annual deficits resulting from passenger operations," which are said to have failed by $44,497,041 in 1930, in the western district, to pay the operating expenses of such services. On the other hand the commission said that the freight operations were profitable, having produced $588,897,446 more than the operating expenses assignable to such services.

An Impartial Opinion on Truck License Fees

There is little question that the tremendous expense of highway construction and maintenance of recent years has been due to the necessity of providing adequately for commercial traffic. The necessity for wider surfaces to take care of the volume of slow-moving vehicles is obvious. Motor trucks are fertile sources of many serious highway accidents. Engineers are not agreed on the relation of heavy vehicular traffic to the thickness of the pavement slab under New Jersey's particular conditions, but there is convincing evidence to show that such traffic is an important factor in the maintenance cost of any highway, and must be considered in planning new construction.

The time has come when New Jersey highway carriers must contribute a more equitable proportion of the cost of the facilities which have been provided for them by the State. The question of whether or not truckers are being subsidized at the expense of the railroads does not enter the discussion. Irrespective of the question of fairness to other carriers, truck owners are not contributing their share to the expenses of the State of New Jersey.

—From a Survey of N. J. State Fiscal Problems by the School of Public Affairs, Princeton University.

R. C. C. Loans

The Railroad Credit Corporation, according to its monthly report to the Interstate Commerce Commission, on January 31, had either actually made or authorized loans to railroads to meet their fixed interest obligations totaling $53,259,918. Of that amount, $48,163,052 represented loans actually outstanding. Reported rate increases, under Ex Parte 103, totaled $57,159,070 in the first eleven months of 1932, and $4,957,977 in November.

Suggests Abandonment of Federal Barge Service

Shannon committee would also curtail many other business ventures of the government

A recommendation that the service of the Federal Barge Line, conducted by the Inland Waterways Corporation, "should be discontinued and liquidated by sale to private enterprise," is included in the report submitted to the lower House of Congress on February 8, by the special committee appointed last May to investigate government competition with private enterprise, of which Representative Joseph B. Shannon is chairman. This was one of a series of 26 recommendations made by the committee proposing the discontinuance of various forms of government activity which were called to its attention during the course of its investigation; and, according to the report, the agencies involved "represent only a small part of the chain maintained by the government which are engaged in competitive activities with private business."

The committee also recommended that the Postoffice Department discontinue its practice of soliciting parcel post business and that all parcel post rates be placed on a basis that will provide revenues sufficient to cover the entire cost of the service rendered, as provided in the act of 1912 establishing the parcel post system.

It was stated that the committee had heard voluminous testimony both for and against the further development of inland waterway transportation but that in view of the fact that this is a matter of broad national policy heretofore laid down by Congress, this committee does not feel justified in making any specific recommendations with reference to that point. It does, however, suggest the desirability of a further study of this whole subject in the light of the development since the World War of new and additional transportation facilities.

Protests against the government competition represented by the federal barge service and the parcel post service had been made before the committee by the railroads and other transportation and warehousing interests as well as by several organizations of railway employees.

"The evidence in general indicates," the report said, "that the operations of the federal government in the field of private enterprise has reached a magnitude and diversity which threatens to reduce the private initiative, curtail the opportunities and

(Continued on page 222)

Canada's Senate Favors Duff Report Principle

Committee favors trustee plan of compulsory co-operation by railways

With the adoption of the preamble or principle of the bill by a vote of 24 to one, deletion of the section which forbade the appointment as trustees of members of Parliament, and passage of section four which provides that the board of trustees shall consist of three members, important progress was made last week at Ottawa by the Senate Railway Committee on the legislation giving effect to the recommendations of the Duff Commission on the Canadian railways.

Lively exchanges between Senator Raoul Dandurand, Liberal leader in the Senate, and Senator James Murdock, former Minister of Labor and representing the interests of railway employees, together with vigorous words from Rt. Hon. Arthur Meighen, government leader in the Senate, in support of the section dealing with the composition of the board of trustees, were features of the deliberations.

Senator Dandurand, speaking to the central question of whether or not Parliament would be justified in enacting legislation which imposed coercive co-operation on the railways and in putting anything in the way of an amalgamation of the two roads, for operating purposes, under private management, told the committee that when he was expressing his views on this question he was expressing his interest in the welfare of all the people while Senator Murdock was really representing special interests, meaning the employees.

Senator Murdock declared that the reverse was true, and that an amalgamation, such as suggested by Senator Dandurand, would wipe out competition effectively and be injurious, if not ruinous to the interests of the employees. He said that the committee had no right to deal with the principle of the bill, that that had been adopted by the Senate as a whole.

The chairman intervened to point out that the committee had fairly wide powers, that it could take a vote to ascertain if there was a majority in favor of amalgamation and if there was the bill would be killed. On the other hand, the committee could vote in favor of joint operation, and again the bill would be killed. Again, the committee could take a vote on the preamble of the bill, and in doing so the committee would be within the rules of the Senate. This last was the action taken.

David B. Hanna, who was associated with the Canadian Northern and from 1919 to 1922 was head of the government railways later to be known as the Canadian National, told the committee that he was opposed to the provision in the bill for an arbitral tribunal in addition to the trustees, since the present Railway Board was quite capable of adjusting any disputes between the two roads when it came of eliminating duplicative service. Mr. Hanna criticized the manner in which Sir Henry Thornton had conducted the affairs of the Canadian National and denounced as extravagances many of that system's capital outlays.

"Our policy," said Mr. Hanna in referring to his management of the government lines, "was one of rigid economy, and many of the men now in charge of the Canadian National Railways were trained at that time, and in that way. If you leave them alone now you will have the same rigid economies we practiced then."

Substitute Trucks for Transfer Freight Cars

The Chicago, Indianapolis & Louisville has substituted motor truck service in place of freight car operation for the transfer of l.c.l. freight from the Forest Hill transfer station of the Baltimore & Ohio Chicago Terminal to the Monon freight station at Polk and Dearborn streets, Chicago. Under the present arrangement, freight received at the Forest Hill station by 2 p.m. departs from Chicago via the Monon on the same day. The truck service is operated by the F. Landon Cartage Company, Chicago, under contract with the railway.

Drought Relief Rate Regulations Held Unreasonable

The Interstate Commerce Commission has issued a report finding unreasonable and unjustly discriminatory tariff regulations and their application under which Henry C. Stuart, formerly governor of Virginia, was refused the benefit of the emergency drought-relief reduced rates in 1930 on shipments of livestock, on the ground that he was not a "needy farmer" as defined in regulations issued by the Department of Agriculture. The railroad tariffs had made the application of the reduced rates dependent upon approval of a permit by a department representative.

Roads Seek To Stay Installation of New Rail-Barge Rates

Middle Western and Eastern railroads on February 2 joined in the filing of a petition in the United States District Court at Wilmington, Del., to stay the enforcement of the Interstate Commerce Commission's recent order requiring the establishment of additional through rates by barge-and-rail routes on cotton between points in Arkansas and Memphis, Tenn., on the one hand and points in New York, New Jersey, Massachusetts, Rhode Island and Connecticut on the other hand. (See *Railway Age* of December 31, 1932, page 992.)

December Net Exceeded That of December, 1931

Return of 1.25 per cent for 1932, however, compares with 2 per cent for previous year

Class I railroads for the twelve months of 1932 had a net railway operating income of $334,324,999, which was a return of 1.25 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. The net in 1931 was $537,945,488 or 2 per cent. Operating revenues in 1932 amounted to $3,161,928,659 compared with $4,236,421,341 in 1931, a decrease of 25.4 per cent. Operating expenses $2,429,385,918, compared with $3,259,295,115 in 1931, a decrease of 25.5 per cent. Taxes paid in 1932 aggregated $279,284,244, a decrease of $28,723,397 or 9.3 per cent under the total tax bill of 1931.

Fifty-nine Class I railroads operated at a loss in 1932, of which 17 were in the Eastern, 15 in the Southern and 27 in the Western district.

For December, the net amounted to $32,856,895, or at the rate of 2.01 per cent. In December, 1931, the net was $27,618,392 or 1.68 per cent.

Operating revenues for December amounted to $246,062,200 compared with $288,645,768 in December, 1931, or a decrease of 14.8 per cent. Operating expenses in December totaled $188,205,333 compared with $235,206,477 in the same month the year before, or a decrease of 20 per cent.

The net railway operating income for the year 1932 in the Eastern district amounted to $220,167,223, at the rate of 1.78 per cent. In 1931 the net was $278,018,371 or 2.26 per cent. Operating revenues in the Eastern District in 1932 totaled $1,618,671,591, a decrease of 23.8 per cent below 1931, while operating expenses totaled $1,199,328,810, a decrease of 26.5 per cent. The Eastern District reports for December a net of $19,784,211, compared with $14,129,183 in December, 1931.

Reports for the Southern district for the year 1932 showed a net of $26,347,968, or at the rate of 0.79 per cent. In 1931, the net amounted to $44,662,533, a return of 1.34 per cent; operating revenues $379,255,568, a decrease of 26.7 per cent, and operating expenses $312,957,273, a decrease of 26.5 per cent. The net income in the Southern district in December amounted to $5,944,693, while in the same month in 1931, it was $3,683,655.

The Western district for the year 1932 had a net of $87,809,808, which was a re-

CLASS I RAILROADS—UNITED STATES

	1932	1931	Per Cent
Month of December			
Total operating revenues	$246,062,200	$288,645,768	14.8 DE.
Total operating expenses	188,205,333	235,206,477	20.0 DE.
Taxes	15,760,341	16,270,583	3.1 DE.
Net railway operating income	32,856,895	27,618,392	19.0 INC.
Operating ratio—per cent	76.49	81.49	...
Rate of return on property investment	2.01%	1.68%	...
Twelve months ended December 31			
Total operating revenues	$3,161,928,659	$4,236,421,341	25.4 DE.
Total operating expenses	2,429,385,918	3,259,295,115	25.5 DE.
Taxes	279,284,244	308,007,641	9.3 DE.
Net railway operating income	334,324,999	537,945,488	37.9 DE.
Operating ratio—per cent	76.83	76.94	...
Rate of return on property investment	1.25%	2.00%	...

turn of 0.79 per cent. In 1931 it was $215,264,584, a return of 1.92 per cent. Operating revenues, $1,164,001,500, a decrease of 27.1 per cent, while operating expenses totaled $917,099,835, a decrease of 23.7 per cent. For December, the net in the Western district amounted to $7,127,991: in December, 1931, it was $9,805,554.

Toronto Railway Club

The Toronto Railway Club, Toronto, Ont., will hold its next meeting at the Royal York Hotel on Friday evening, March 3. M. J. Gormley, executive vice-president of the American Railway Association, will speak on "The case of the Railroads versus Other means of transportation."

I. C. C. Appropriation

The House on February 3 passed the independent offices appropriation bill without making any change in the appropriation for the Interstate Commerce Commission for the fiscal year 1934 from the amount recommended by the Bureau of the Budget and the appropriations committee, $7,137,639.

New York Railroad Club Meeting

Prof. Samuel W. Dudley of the Sheffield Scientific School of Yale University, will be the principal speaker at the meeting of the New York Railroad Club on Friday evening, February 17. He will discuss the development of the new Westinghouse type "AB" brake equipment to meet the exacting conditions of modern freight train operation. Air brake experts, as well as operating and mechanical department officials, will take part in the discussion.

Illinois Denies Truck Permits

In a decision that is held to be of major importance, the Illinois Commerce Commission has refused to grant operating certificates as common carriers to two trucking companies in the state. The companies involved are the Keeshin Motor Express Company and the Interstate Trucking Company, operating a total of 225 motor trucks. The commission instructed the attorney general of Illinois to obtain court orders at once to restrain the two companies from continuing their operations. In denying the applications, the commission pointed out that the operations of these companies endangers the investments of the railways in transportation facilities, and that the railroads, furnishing service to 22,875 communities in the state, deserve the protection of the regulatory body.

Saddle Trips to Be Part of Northern Pacific Service

The Northern Pacific, during the coming vacation season, will establish several saddle trips to points of interest in Montana. In co-operation with the American Forestry Association, it will make saddle trips available to travelers over trails with United States forest rangers. Two trips have been outlined, one in the Flathead national forest and the other in the Lewis and Clark national forest. These will be seven-day rides over the trails and will be all-expense vacations.

Another trip is a "dude ranch" detour to be conducted in co-operation with two guest ranches in the Montana Rockies. This two-day side trip into the Blackfoot valley of Western Montana will provide for a day and an overnight stay at each resort, and is so arranged that westbound travelers may leave the train at Helena, Mont., for a motor trip to the two ranches and then to Missoula, Mont., where the train journey westward will be resumed two days later. Eastbound travelers will make the side trip in a reverse direction.

Net Deficit For Eleven Months $156,188,907

Class I railroads in the first eleven months of 1932 had a net deficit of $156,188,907, after fixed charges, as compared with a net income for the corresponding period of 1931 of $104,915,409, according to the Interstate Commerce Commission's monthly compilation of selected income and balance sheet items. For the month of November the net deficit was $9,975,520. The net operating income for eleven months was $302,796,445 and other income amounted to $177,279,555, while the deductions amounted to $636,264,907. The statement follows:

Western Railway Club to Hear About Truck Operations

At the regular monthly meeting of the Western Railway Club, to be held at the Hotel Sherman, Chicago, Monday evening, February 20, the subject "Highway Safety from a Truck Operating Standpoint" will be presented by W. E. Vergan, air-brake supervisor of the Missouri-Kansas-Texas, Parsons, Kan. Mr. Vergan made an extended study and personal investigation of actual truck operating conditions in the Southwest early in 1932 and was a witness in hearings before the Texas Commission, which hearings resulted in the adoption of legislation, favorable from a railroad, as well as a public standpoint. Mr. Vergan's address, presenting a considerable amount of information not previously available, will contain a description of truck brake tests in both Texas and Louisiana. It will be well illustrated with lantern slides and show the inadequate braking condition which exists on many highway trucks, as evidenced by the slow deceleration and excessive stopping distances required, especially when heavily-loaded trucks are

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS

Compiled from 160 reports (Form IBS) representing 165 steam railways, including 17 switching and terminal companies

TOTALS FOR THE UNITED STATES (ALL REGIONS) †

For the month of November			For the eleven months of	
1932	1931	*Income Items*	1932	1931
$34,347,141	$36,935,663	1. Net railway operating income	$302,796,445	$512,238,229
14,319,027	17,541,466	2. Other income	177,279,555	224,345,011
48,666,168	54,477,129	3. Total income	480,076,000	736,583,240
11,153,776	10,846,306	4. Rent for leased roads	121,802,205	121,348,297
45,059,561	44,899,138	5. Interest deductions	491,053,561	485,945,133
2,428,351	3,943,780	6. Other deductions	23,409,141	24,374,401
58,641,688	59,689,224	7. Total deductions	636,264,907	631,667,831
d 9,975,520	*d 5,212,095*	8. Net income	*d 156,188,907*	104,915,409
		9. Dividend declarations (from income and surplus):		
11,079,380	31,858,779	9-01. On common stock	65,662,159	245,084,646
1,042,009	1,773,335	9-02. On preferred stock	15,478,800	45,095,846

BALANCE-SHEET ITEMS

Selected Asset Items

	Balance at end of November	
	1932	1931
10. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	$764,078,080	$829,879,283
11. Cash	345,108,025	389,914,946
12. Demand loans and deposits	37,125,370	57,828,141
13. Time drafts and deposits	41,315,253	53,503,913
14. Special deposits	28,398,031	35,118,193
15. Loans and bills receivable	11,967,321	10,611,930
16. Traffic and car-service balances receivable	49,746,478	59,831,744
17. Net balance receivable from agents and conductors	41,077,779	47,952,798
18. Miscellaneous accounts receivable	140,189,455	168,982,279
19. Materials and supplies	321,835,320	377,622,754
20. Interest and dividends receivable	47,075,592	47,562,878
21. Rents receivable	2,371,124	4,690,399
22. Other current assets	9,731,623	14,269,060
23. Total current assets (Items 11 to 22)	1,075,941,371	1,267,889,035

Selected Liability Items

24. Funded debt maturing within six months*	221,842,228	81,170,673
25. Loans and bills payable	277,556,379	235,231,848
26. Traffic and car-service balances payable	69,435,795	81,752,877
27. Audited accounts and wages payable	224,803,555	291,520,139
28. Miscellaneous accounts payable	85,005,645	77,500,400
29. Interest matured unpaid	159,061,399	144,381,848
30. Dividends matured unpaid	4,761,673	15,513,743
31. Funded debt matured unpaid	49,481,470	56,311,898
32. Unmatured dividends declared	11,944,860	25,091,010
33. Unmatured interest accrued	126,001,392	123,942,976
34. Unmatured rents accrued	37,593,457	36,553,965
35. Other current liabilities	17,090,670	19,575,854
36. Total current liabilities (Items 25 to 35)	1,062,736,295	1,107,376,558

† Complete data for the following Class I railways not available for inclusion in these totals: Canadian National Lines in New England, Canadian Pacific Lines in Maine, and Canadian Pacific Lines in Vermont.

* Includes payments which will become due on account of principal of long-term debt (other than that in Account 764, Funded debt matured unpaid) within six months after close of month of report.

d Deficit.

operated with unbraked trailer equipment. The hazards to life and property as a result of this condition will be emphasized to suggest the necessity for corrective legislation in all states.

Would Tax Passenger and Freight Sales

A sales tax bill has been introduced in the general assembly of the Indiana legislature, which provides a two per cent tax on passenger and freight sales of the railroads doing business in Indiana.

One Fatality in 15 Years on Milwaukee

A record of 15 years with only one passenger fatally injured as a result of an accident involving its passenger trains, was established by the Chicago, Milwaukee, St. Paul & Pacific upon the completion of 1932 with no passenger killed. During the 15 years, more than 154,000,000 passengers have traveled on this railroad, their journeys totaling over 10,000,000,000 miles.

Pennsylvania Starts Messenger Ticket Delivery

The Pennsylvania on February 1 established a railroad and Pullman ticket delivery in Chicago, deliveries being made by the Western Union Telegraph Company. Persons desiring to have tickets delivered to any address in Chicago may telephone any local Pennsylvania ticket office or the Chicago Union station and prompt delivery will be made, the service being available from 7:30 a.m. until 10 p.m., including Sundays and holidays, with the exception that delivery from the city ticket offices will be made only during the hours these offices are open. A nominal delivery charge is made within the boundaries of Chicago avenue, Roosevelt road and Halsted street, while the regular Western Union errand rate applies elsewhere.

Petition for Rate Reduction Set for Argument

The Interstate Commerce Commission has assigned for oral argument at Washington on February 25 the question of whether it should institute an investigation as to the reasonableness of freight rates on basic commodities as requested in a "memorial petition" filed on January 25 on behalf of the American Farm Bureau Federation, the Farmers' Educational and Cooperative Union of America, the National Coal Association, the National Grange, and the National Lumber Manufacturers' Association. The petition asked the commission to order the railroads to appear and show cause why they should not be required to readjust their freight rate levels on all basic commodities (except in those cases where the rates have been reduced to meet competitive agencies of transportation) "to meet the emergency which continues to confront the basic commercial industries of the country." The commission has served copies of the petition upon the Association of Railway Executives and the American Short Line Railroad Association, who, with others interested, are given ten days in which to file answers to the petition.

General Electric Special Train for Advertising

A special train, electrically equipped throughout and with the exterior of both sides of the train electrically lighted, will be operated by the General Electric Company from Los Angeles, Cal., to Washington, D. C., and then to New York, during the period from February 21 to March 9, as a feature of its advertising campaign to promote sales of kitchen equipment. The interior of the train will contain a complete General Electric kitchen with electric appliances in operation, while a replica of Malibu Beach will include sunlamps. Special generating equipment will be set up in the baggage car to furnish current for the kitchen and exterior lighting, while sun arcs will throw colored light beams into the sky at night.

The train, on which will be a number of movie stars, will stop at 14 cities as follows: Los Angeles, Cal., on February 21; Denver, Colo., February 23; Kansas City, Kan., February 24; St. Louis, Mo., February 25; Indianapolis, Ind., February 27; Chicago, February 28; Detroit, Mich., March 1; Cleveland, Ohio, March 2; Pittsburgh, Pa., March 3; Washington, D. C., March 4; Baltimore, Md., March 6; Philadelphia, Pa., March 7; Boston, Mass., March 8, and New York, March 9.

Nearly 5,000,000 See Pullman Exhibits

A total of 4,529,013 visitors inspected the various exhibits of the Pullman Company during the period from March 28, 1931, to November 30, 1932. It is estimated that 60 per cent of these visitors had never seen the interior of a Pullman car.

The attendance at the various exhibits follows:

Pullman building, Chicago—March 28, 1931, to November 30, 1932	272,611
Union station, Chicago — December 9, 1931, to November 30, 1932	671,906
Pennsylvania station, New York — December 13, 1931, to November 30, 1932	1,235,997
Grand Central station, New York—December 15, 1931, to November 30, 1932	1,037,860
Pennsylvania station, Pittsburgh—February 24, 1932, to November 30, 1932	223,264
Union station, St. Louis — March 2, 1932, to November 30, 1932	150,718
Northwestern station, Chicago—May 13, 1932, to November 30, 1932	172,016
Union station, Kansas City—July 16, 1932, to November 30, 1932	315,377
New York Central station, Buffalo—December 1, 1931, to June 9, 1932	106,310
Union station, Washington—December 26, 1931, to July 11, 1932	195,654
Los Angeles, Cal.—June 1, 1932, to August 31, 1932	147,300

The Pennsylvania station, New York, had the largest attendance for November with 124,560 for the month and an average daily attendance of 4,152. The average daily attendance for all points in November was as follows:

Pennsylvania station, New York	4,152
Grand Central station, New York	3,841
Union station, Kansas City, Mo.	1,573
Union station, Chicago	1,388
Union station, St. Louis	536
Pullman building, Chicago	410
Northwestern station, Chicago	382
Pennsylvania station, Pittsburgh	296

Senate Votes To Eliminate Air Mail Subsidy

The United States Senate displayed a disposition to be rather "hard-boiled" in its treatment of transportation subsidies during its consideration of the Treasury-Postoffice appropriation bill. On February 1 it voted 39 to 35 to eliminate entirely from the bill all funds for the air mail service, for which the House bill had provided $19,000,000 for the fiscal year 1934, and shortly before it had inserted a provision that no funds provided by the bill should be used to pay the Seatrain Lines, on its contract for the carriage of ocean mail.

The vote on the air mail appropriation came as a result of efforts by Senator McKellar and others to cut the appropriation in two, on the theory that half the amount represented a subsidy; with a provision that when the net receipts from domestic air mail exceed $9,500,000, then such excess might be used for additional payments to the air mail operators. The Senate first voted, 49 to 31, however, to reduce the amount to $16,000,000, with a similar proviso, after which Senator Robinson, of Arkansas, proposed to eliminate the item entirely, saying he wished to test the sense of the Senate on economy in government expenditures; and that if the matter is not worked out in conference there will be ample time before the beginning of the fiscal year to settle on a policy which may be regarded as fair. The Robinson amendment was then adopted and drew an immediate protest from the Postmaster General, who wrote to Senator Robinson that eliminating or crippling the air mail service now would "practically destroy the aeronautical industry." The question of the ocean mail subsidy also caused considerable debate but the Senate on February 4 rejected by a vote of 36 to 32 a proposal to reduce the appropriation for this purpose from $35,500,000 to $28,000,000.

Electric Pipe-Welding Patents Upheld

After litigations extending over eight years in which the Johnston patents covering electric resistance welding of tubing and piping, owned by Steel & Tubes, Inc., Cleveland, Ohio, a subsidiary of the Republic Steel Company, Youngstown, Ohio, have been uniformly upheld, the United States Supreme Court has refused to review the decision handed down in the United States Court of Appeals in the most recent suit.

The litigation surrounding these patents dates back to 1924 when the first of four infringement suits was brought by Steel & Tubes, Inc., in the United States District Court of the Eastern District of New York. In this and the two succeeding suits the District Court held the patents valid and infringed. The third suit involved also the Belmont patent for rolling down the burr left by the welding operation which also was held valid and infringed. In this case the Johnston patents were held to cover edge-surface welding. In the first of these suits only was the decision appealed to the Circuit Court, and that court, the Circuit Court of Appeals for the second circuit, in New York City, sustained the original decision in May, 1925.

The fourth suit was brought against the General Tube Company, Newark, N. J., in the United States District Court for the District of New Jersey, which held the patents valid but declared them infringed only when machines were operated in excess of 30 ft. per min. Both parties ap-

pealed this decision to the United States Court of Appeals for the third circuit, and in October, 1932, this court handed down the opinion that the patents were valid and that the invention was not limited to any speed. The General Tube Company then filed a petition for a re-hearing, which was denied, and also filed with the United States Supreme Court a writ of certiorari, which was denied, bringing the long period of litigation to a close.

The process, originally developed by the Republic Steel Corporation to produce small, light-wall mechanical tubing, has been applied by that company to commercial production of pipe in sizes up to 16 in. in diameter and in all standard wall thicknesses. The electric resistance welding process, producing no zone of weakness at the weld, is believed to open the field of alloy steels and irons for piping material, as it is free from the limitations of the conventional fire-welding methods when handling materials of special analyses.

Suggests Abandonment of Federal Barge Service

(*Continued from page 218*)

infringe upon the earning powers of tax-paying undertakings while steadily increasing the levies upon them.

"The committee upon its appointment was immediately deluged with complaints, not only from the basic industries and national industrial and commercial organizations of the country, but from smaller establishments in all sections of the country. These protests set forth that the complainants were suffering in one form or another from the adverse effects of competition from federal bureaus and other governmental agencies. It was rapidly made manifest that there was a widespread and growing feeling of resentment against governmental interference with all kinds and conditions of private business enterprise. Unfavorable conditions which had existed prior to 1929 had also evidently been greatly intensified by the existing depression and by the government's policy of engaging in certain unprecedented and large-scale activities through such powerful agencies as the Farm Board and Inland Waterways Corporation. The appointment of the committee was welcomed by business men as a long-desired opportunity to give full and free expression to the general dissatisfaction against governmental enterprises which had for years of patient suffering prevailed in private, commercial and industrial circles."

Comment by the committee on the operations of the corporation included the following:

"It would be necessary for private capital to meet taxes and interest charges and it is apparent that a corporation which has failed so signally to meet interest charges and tax charges has not demonstrated that private capital can successfully under the same conditions as the Inland Waterways engage in barge line operations.

"One of the facts which has been demonstrated is that transportation of materials by barges of the Inland Waterways Corporation is not cheap transportation. When a shipper ships by railroad, the rate which is charged by the railroad is the total charge for the transportation of material. With the sums received, the railroad maintains its roadway, pays taxes and is entitled to earn a return on its investment in addition to pay the other costs incident to the transportation of the materials. The Federal Barge Line, on the other hand, with the moneys which it receives from shippers, pays nothing for taxes except the taxes on its railroad property, makes no attempt to earn a return on its investment and pays nothing for the use of the stream or to reimburse the government for its expenditures for construction and maintenance. It transports materials for approximately 80 per cent of the rail rate. The railroads claim to pay out annually approximately 6 per cent or 6½ per cent of their gross revenue for taxes, and this one item alone accounts for one-third of the barge line differential. That part of the transportation cost represented by the maintenance of roadway, interest on investment and taxes which is paid by the shipper when he ships by rail is borne by the taxpayer when the materials move by Federal Barge Line and this burden which is borne by the taxpayer is much greater than the difference between the railroad freight rate and the barge line freight rate.

"The government advertises this barge service as being government-operated . . . This is manifestly unfair competition and places a serious handicap on the private corporation, firm or individual, who is obliged to compete for business with a direct agent of the government.

"It appears that a differential of 20 per cent exists between the rates published by the railroads and the rates charged by the Inland Waterways Corporation for similar port-to-port service. This differential was established as an emergency measure during the war, and proper effort has not been exerted to determine whether these basic rates provide sufficient revenue to meet expenses.

"It is apparent that the Upper Mississippi River improvement will not be finished for many years. It is evident also that the barge line officers are not satisfied with the joint routes and rates now established. General Ashburn stated that if the barge line was not forced to extend its operations, buyers might be found in a few years who would purchase the property, but next year the barge line will extend its operations to Kansas City and Chicago and it is to be presumed that in the years to come efforts will be made to secure further extensions to operations of this corporation. General Ashburn stated that at the present time no corporation would be willing to take over all the operations of the Inland Waterways Corporation.

"In the light of the foregoing facts, and in the face of the subnormal conditions affecting industry and transportation, as well as government finance, the committee recommends that the Federal Barge Line, conducted by the Inland Waterways Corporation, should be discontinued and liquidated by sale or long-time lease to private enterprise at an early date."

Representative Cox did not concur in the recommendation as to the barge line.

Equipment and Supplies

FREIGHT CARS

THE MONSANTO CHEMICAL WORKS is inquiring for one tank car of 7,000 gal. capacity.

IRON AND STEEL

THE CHICAGO, BURLINGTON & QUINCY has ordered 130 tons of structural steel for a bridge at Homer, Neb., from the American Bridge Company.

NEW YORK CENTRAL.—James Stewart & Company, Inc., contractor for this road's new St. Johns Park freight terminal, New York City, has ordered from the American Bridge Company about 21,500 tons of steel for the superstructure of the new freight terminal. Additional orders will be placed for 15,000 tons of steel for this work during the coming month.

MISCELLANEOUS

THE CHICAGO, BURLINGTON & QUINCY, on February 1, recalled 220 employees to work in its Aurora, Ill., shops; the return of this number after a brief layoff brings the total force now at work in these shops to 550 men.

Construction

BOSTON & MAINE.—The New York Public Service Commission has directed the elimination of the River street crossing of the Boston & Maine in the village of Hoosick Falls, Rensselaer county, N. Y. This is to be accomplished by raising the grade of the highway and carrying it over the tracks of the railroad on an overhead structure and across the Hoosic river on a new bridge. The estimated cost of the entire project is $129,700, exclusive of lands and property damages. The plan approved by the Commission provides for the construction of a 38-ft. bridge of steel and concrete over the railroad which will connect directly with the east end of a 200-ft. bridge over the river.

NEW YORK CENTRAL.—A contract has been given to James Stewart & Company, Inc., New York, for the construction of the superstructure of the new St. Johns Park freight terminal to be built in connection with the New York Central's West Side improvement project in New York City. The work involves the placing of about 35,000 tons of steel.

VIRGINIAN & WESTERN (VIRGINIAN).—A contract has been awarded to Fairbanks, Morse & Co., Chicago, for the construction at Justice, W. Va., of a reinforced concrete automatic locomotive coaling station, having a capacity for handling 90 tons of coal an hour.

Supply Trade

Ely C. Hutchinson has been elected president of the **Edge Moor Iron Company,** Edge Moor, Del., to succeed **William F. Sellers,** retired. Mr. Hutchinson had a long executive experience in the iron trades prior to 1929, since which time he has been editor-in-chief of Power.

The Crucible Steel Company of America, New York, has purchased the entire business of the **Copperbond Steel Products Company,** New York, including all patent rights covering an improved process for the producton of copper-covered steel wire. The business will in future be operated as the **Crucible Copperbond Division** of the **Crucible Steel Company of America,** with **William J. McIlvane** as manager of this division, with headquarters at New York. Mr. McIlvane was formerly central station sales manager of the Bridgeport Brass Company, Bridgeport, Conn.

Marion B. Richardson, associate editor, mechanical department, of the *Railway Age,* has resigned to join **C. Raymond Ahrens,** 30 Church street, New York, in the railway and general sales business. The new firm will be a limited partnership under the name of **Ahrens & Richardson,** with offices at 30 Church street. Mr. Richardson was born at Girard, Pa., on March 2, 1892. He attended the public and high schools of Grove City, Pa., and in 1921 was graduated from the Pennsylvania State College with the degree of B.S. in railway mechanical engineering. He received the degree of M.E. in 1926. In 1912 he was employed as a machine hand by the Bessemer Gas Engine Company, Grove

M. B. Richardson

City, and in 1913 he entered the service of the Bessemer & Lake Erie, serving successively until 1915 as track laborer, storeroom laborer and locomotive fireman. From 1917 until 1919 he was with the A. E. F. as Second Lieutenant, Ordnance Department assigned to the Aerial Armament Division of the Air Service as test engineer. He returned to the Bessemer & Lake Erie in 1919 as draftsman, mechanical engineering department, and in 1921 became shop draftsman. He became associate editor, mechanical department, of the *Railway Age* and associate editor of the Railway Mechanical Engineer in 1923. Mr. Richardson is secretary of the Railroad Division of the American Society of Mechanical Engineers.

Air Reduction Company Annual Report

Net earnings of $2,293,760 after all charges, including Federal taxes, were reported by the Air Reduction Company for the year ending December 31, 1932. This is equivalent to $2.72 per share on the 841,288⅝ shares of the company's stock outstanding and compares with 1931 net earnings of $3,815,410, or $4.53 a share. The balance sheet as of December 31, 1932, lists current liabilities of $1,251,431 as against a listing, among the current assets, of cash items alone totaling $5,426,218.

The consolidated income report for the year 1932 follows:

Gross operating income	$11,730,889
Operating expenses	8,253,046
Operating income	3,477,843
Other income	679,939
Net income before reserves	4,157,782
Operating reserves ($1,646,076 for depreciation of assets)	1,647,875
Net profit before Federal taxes	2,509,907
Federal taxes, 1932	216,147
Net profit earned on outstanding stock	$2,293,760

General Railway Signal Company Annual Report

The General Railway Signal Company, for the year ending December 31, 1932, reported a net income of $634,665 after all charges, including taxes, as compared with a net income of $1,210,254 for 1931. Last year's net was equivalent to $1.55 per share of outstanding common stock while the 1931 earnings equalled $3.33 a share; common stock dividends of $1.50 per share were paid in 1932 as compared with the $5 paid in the previous year.

The balance sheet as of December 31, 1932, shows total current liabilities of $220,862, and current assets of $5,563,460, including $1,847,550 in cash. The volume of orders booked in 1932, the report says, was 23.6 per cent of that for 1931 and orders executed last year were 55.3 per cent of those filled in the previous year; the dollar value of unfilled orders on hand as of January 1 was 27.7 per cent of that of January 1, 1932.

The profit and loss and surplus accounts for the year ending December 31, 1932, are shown in the accompanying table.

OBITUARY

V. C. Turner, vice-president and treasurer of the Scullin Steel Company, St. Louis, Mo., died on January 29.

Charles V. Barrington, vice-president in charge of manufacturing, Jenkins Bros., Bridgeport, Conn., died on January 30 at his home in Bridgeport.

Charles C. Shepard, founder and at one time vice-president and treasurer of the Ingalls Shepard Forging Company, Harvey, Ill., and formerly an officer of the Buda Foundry & Manufacturing Company, Harvey, died in Omaha, Neb., on February 3.

William Bennett, for the past 30 years production engineer and chief inspector of the Union Steel Casting Company, Pittsburgh, Pa., died on February 3 of pneumonia after an illness of a few days. He was 75 years of age. Mr. Bennett had a wide acquaintanceship among the users of steel castings, particularly men of the mechanical and test departments of the railroads.

Theodore G. Seixas, assistant to vice-president of the Allegheny Steel Company,

General Railway Signal Company

PROFIT AND LOSS ACCOUNT

Gross Operating Income, before Depreciation			$1,612,769
Selling, Administrative and General Expenses			691,728
			$921,041
Interest, Dividends and Miscellaneous Income			88,028
			$1,009,069
From which deduct:			
Depreciation and Amortization		$352,681	
Interest Charges on Temporary Loans		10,723	
Loss on Sale of Marketable Securities	$559,063		
Less Appropriated from Reserve	559,063	—	
Provision for Federal and State Taxes		11,000	374,404
Net Income for Year			$634,665

SURPLUS ACCOUNT

Earned Surplus:			
Earned Surplus as at December 31, 1931			$2,641,051
Net Income for Year ended December 31, 1932			634,665
Excess of Par Value over Cost of Preferred Stock purchased for Treasury			6,480
Sundry Credits (Net) applicable to Prior Period			2,600
			$3,284,796
From which deduct:			
Dividends Paid, less Dividends on Treasury Stock:			
Preferred—6%		$138,828	
Common—$1.50 per share		481,050	
Appropriation to Reserve for Shrinkage in Value of Marketable Securities		250,000	869,878
Earned Surplus as at December 31, 1932			$2,414,918
Paid-in Surplus			1,734,451
Total Surplus as at December 31, 1932			$4,149,369

with headquarters at Philadelphia, Pa., died at his home in that city on January 26 at the age of 59. Mr. Seixas at one time had served as general sales agent of the company and subsequently in charge of the New York and Philadelphia district; at the time of his death he was assistant to vice-president.

Isaac H. Milliken, a vice-president of the McConway & Torley Corporation, who died suddenly on December 30, in the office of that company at Pittsburgh, Pa., was born on August 30, 1872, at Pittsburgh. Mr. Milliken received his education in the public schools of that city and in August, 1888, entered the employ of the McConway

Isaac H. Milliken

& Torley Company as a clerk in the treasurer's office. About January, 1900, he became connected with the sales department and in 1925 was elected vice-president of that company remaining in that capacity until July, 1929, when the company became the McConway & Torley Corporation. Mr. Milliken was then elected one of the vice-presidents of the new corporation, in which position he remained until the time of his death.

Warren S. Corning, president of Warren Corning & Co., Chicago, died at Winnetka, Ill., on February 4. He was born in Peoria, Ill., in 1889 and received his education at Mt. Pleasant Military Academy, Kenyon College and the University of Chicago. In 1912, he entered the employ of the Hewitt Manufacturing Company, Chicago, where he was employed in the plant and in the following year, became a sales representative. In 1914, he organized Corning, Dunne & Co., Chicago, which in 1916 was taken over by Warren Corning & Co. In 1917, he discontinued the operation of this company to enter the army as a private in the 13th Engineers. After being promoted to sergeant and first lieutenant in the department of light railways and roads, he was commissioned captain of Company D of the 3rd Engineers. Later he was appointed aide-de-camp to Major General M. M. Black, chief of engineering. In 1918, he returned to civil life to resume the operation of his company, which occupation he followed until his death.

Financial

BALTIMORE & OHIO.—*R. F. C. Loan.*—The Interstate Commerce Commission on February 2 approved an additional loan of $5,000,000 to this company from the Reconstruction Finance Corporation for the purpose of discharging the principal of equipment obligations maturing during the first half of this year. The commission had previously approved loans to this company aggregating $67,125,000 of which it had drawn down $38,825,000.

The report pointed out that the company has been successful in the development of its plan for paying in cash 50 per cent of its $63,250,000 bond issue maturing March 1, for which a loan had been approved, and said it had progressed to the point where it may reasonably be expected to become operative in the near future. "The consummation of the plan, involving the largest railroad maturity of the current year, should have the effect of strengthening the general credit situation," the report added, "and, in particular, the market position of the applicant's securities."

CANTON & CARTHAGE.—*R. F. C. Loan.*—This company has withdrawn its application to the Reconstruction Finance Corporation for a loan of $150,000 and it has been dismissed.

CAROLINA & NORTHEASTERN.—*Excess Income Order Cancelled.*—Division 1 of the Interstate Commerce Commission has cancelled its recapture order directing this company to pay $1,496 as half its excess income, as determined in a tentative report, on the ground that the sale of the carrier's property by court order following a receivership realized only sufficient money to cover the cost of the receivership proceedings.

CHICAGO & NORTH WESTERN.—*R. F. C. Loan.*—The Interstate Commerce Commission on February 4 approved this company's application for an additional loan of $11,127,700 from the Reconstruction Finance Corporation to meet interest and equipment trust maturities and one-half of a maturing issue of debentures of $6,355,000 due May 1. The commission had previously approved loans amounting to $21,061,350 to this company, of which $19,104,433 had been advanced by the corporation and $2,064,500 had been repaid. The company has also received $1,910,500 from the Railroad Credit Corporation and has applied to that corporation for an additional $1,000,000.

CHICAGO, NORTH SHORE & MILWAUKEE.—*R.F.C. Loan.*—The receivers have applied for a loan of $600,000 from the Reconstruction Finance Corporation to pay operating expenses, taxes, etc. The company received a loan of $1,150,000 before the receivership.

CHICAGO, ROCK ISLAND & PACIFIC.—*R.F.C. Loan.*—This company has applied to the Reconstruction Finance Corporation for a loan of $8,000,000 to meet maturities of principal and interest during the first half of this year. The company has borrowed $10,000,000 from the corporation last year.

CINCINNATI UNION TERMINAL.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $12,000,000 of first mortgage 5 per cent bonds, Series C, to be sold at not less than 97½ and interest and the proceeds used to pay a loan from the Reconstruction Finance Corporation and to complete its terminal facilities.

MINNEAPOLIS & ST. LOUIS.—*R. F. C. Loan.*—W. H. Bremner, receiver, has applied to the Reconstruction Finance Corporation for a loan of $1,027,174 to pay indebtedness incurred in operation, interest on equipment trust certificates, and taxes. A former application for $2,698,630 to pay a bond issue was approved by the Interstate Commerce Commission but not authorized by the corporation.

MISSOURI PACIFIC.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $10,000,000 of first and refunding mortgage 5 per cent bonds, series I, and, subject to their pledge with the Reconstruction Finance Corporation, to pledge its equity in these bonds with the Railroad Credit Corporation as collateral security for notes.

NEW YORK CENTRAL.—*Director.*—L. F. Loree, president of the Delaware & Hudson, and F. E. Williamson, president of the New York Central, conferred with Division 4 of the Interstate Commerce Commission on February 1 on a proposed application for authority for Mr. Loree to serve also as a director of the New York Central in recognition of the interest in N. Y. C. stock recently acquired by the D. & H. Company.

NEW YORK, CHICAGO & ST. LOUIS.—*R. F. C. Loan.*—This company has applied for an additional loan of $2,100,000 from the Reconstruction Finance Corporation to pay fixed charges.

NEW YORK, CHICAGO & ST. LOUIS.—*Director.*—J. J. Bernet, president of the Chesapeake & Ohio, has applied to the Interstate Commerce Commission for authority to serve also as a director and officer of the New York, Chicago & St. Louis.

ST. LOUIS SOUTHWESTERN—*R. F. C. Loan*—The Interstate Commerce Commission on February 1 approved an additional loan of $273,000 to this company from the Reconstruction Finance Corporation, for the payment of taxes due February 2.

Dividends Declared

Atlanta & Charlotte Air Line.—$4.50, semi-annually, payable March 1 to holders of record February 20.

Hartford & Connecticut Western.—2 Per Cent Guaranteed, 1 per cent, semi-annually, payable February 28 to holders of record February 20.

Mill Creek & Mine Hill Navigation & R. R.—$7.25, semi-annually, payable July 10 to holders of record July 3.

Oswego & Syracuse.—$2.25, semi-annually, payable February 20 to holders of record February 8.

Green Bay & Western.—Class A Debentures, $25.00; Capital, $2.50, both payable February 20 to holders of record February 18. A year ago this company paid an annual dividend of $50 on the Class A debenture certificates and an annual dividend of $5.00 on the capital stock.

Average Prices of Stocks and of Bonds

	Feb. 7	Last week	Last year
Average price of 20 representative railway stocks..	25.93	26.81	28.83
Average price of 20 representative railway bonds..	58.13	58.88	67.21

Railway Officers

EXECUTIVE

Harry W. Dorigan, assistant to comptroller of the New York, New Haven & Hartford, has been appointed assistant to vice-president with headquarters at New Haven, Conn., as before.

E. E. Adams, vice-president of the Union Pacific System, with headquarters at Omaha, Neb., has been placed in charge of a new department to concentrate on "research and study of ideas for improved railroad passenger equipment, service and methods that may be found practicable to provide for greater convenience and flexibility for the traveling public."

OPERATING

John Burch, general yardmaster on the St. Louis-San Francisco at Kansas City, Mo., has been appointed superintendent of terminals at Memphis, Tenn., to succeed **E. E. McGuire,** who has been assigned to other duties.

H. P. Justin, trainmaster on the Chicago Terminal division of the Chicago, Rock Island & Pacific, at Chicago, has been promoted to superintendent of the same division, to succeed **Herbert R. Saunders,** deceased.

A. E. Lloyd, superintendent of the Chicago Terminal district of the New York Central Lines, at Chicago, has had his jurisdiction extended to include the West division of the Michigan Central and the Western division of the New York Central. As noted in the *Railway Age* of January 7, **F. F. Riefel,** who was superintendent of both these divisions, has been transferred to Toledo, Ohio.

Following the consolidation of the Coast and Idaho divisions of the Chicago, Milwaukee, St. Paul & Pacific on February 1, the jurisdiction of **F. E. Devlin,** superintendent of the Coast division, with headquarters at Tacoma, Wash., has been extended to include the Idaho division. **P. H. Nee,** superintendent of the latter division, with headquarters at Spokane, Wash., has been transferred to Miles City, Mont., to replace **G. H. Hill,** who has been appointed to the newly-created position of assistant superintendent at Spokane.

TRAFFIC

D. W. Bird has been appointed general agent of the Louisiana & Arkansas, and the Louisiana, Arkansas & Texas, with headquarters at Memphis, Tenn.

L. E. Clarahan, general industrial agent of the Wabash, has been appointed assistant general freight agent, with headquarters as before at St. Louis, Mo., to succeed **Bernard H. Coyle,** deceased.

C. E. Veatch, secretary to the freight traffic manager of the Missouri-Kansas-Texas, has been appointed to the newly-created position of assistant general freight agent, with headquarters as before at St. Louis, Mo.

J. C. Beaumont, chief clerk to the freight traffic manager of the Union Pacific System, with headquarters at Omaha, Neb., has been appointed general agent at Tulsa, Okla., succeeding **F. F. Robinson,** who has been transferred to St. Louis, Mo., to relieve **J. L. Carney,** who has retired after more than 51 years of service with this company.

Supplementing the announcement appearing in *Railway Age* of January 28, page 127, the appointment of **John W. Rimmer** as general freight traffic manager of the Boston & Maine and the Maine Central has been approved by the Interstate Commerce Commission, and **P. J. Mullaney,**

John W. Rimmer

assistant freight traffic manager of the Boston & Maine has been appointed freight traffic manager of that road. **Lucien Snow** will continue as freight traffic manager of the Maine Central. Mr. Rimmer was born on June 10, 1890, at Brookline, N. H. He was educated in the public and high schools of Waldon, Mass., and entered the service of the Boston & Maine in June, 1907, as office boy and messenger. In January, 1912, he was appointed secretary to the freight traffic manager and

Patrick J. Mullaney

three years later he was appointed traveling freight agent. He was promoted to the position of assistant general freight agent in April, 1917, and in January, 1922, he became assistant to the vice-president in charge of traffic. In January, 1929, Mr. Rimmer was appointed assistant freight traffic manager, and in 1930 he became freight traffic manager, the position he held until his recent appointment. In his new position Mr. Rimmer will have general supervision of all freight traffic matters of the two railroads.

Mr. Mullaney was born on December 30, 1892, in Somerville, Mass. He was educated at St. Joseph's high school, and entered railway service in February, 1910, with the Boston & Maine. He served in various clerical positions until 1919, when he was appointed traveling freight agent. He was appointed chief clerk to the vice-president in June, 1923, and in November of the following year he was promoted to the position of assistant general freight and passenger agent at Portland, Me. In January, 1926, he was appointed assistant general freight agent at Boston, in charge of off line agencies, and in July of the same year he was promoted to the position of general freight agent at the same point. In January, 1929, he was appointed assistant freight traffic manager, from which position he has now been promoted to freight traffic manager.

ENGINEERING AND SIGNALING

L. H. Robinson, assistant engineer, maintenance of way, of the Canadian National, with headquarters at Moncton, N. B., has been appointed division engineer at Halifax, N. S., succeeding **Alexander Scott** who has been appointed division engineer at Charlottstown, P. E. I.

The signal and telegraph departments of the Missouri-Kansas-Texas have been consolidated and **J. A. Johnson,** signal engineer, with headquarters at Denison, Tex., has been appointed superintendent of telegraph and signals. The position of superintendent of telegraph has been vacant since the death of **W. H. Hall** in July, 1932.

Following the consolidation of the signal and telegraph departments of the Chicago, Milwaukee, St. Paul & Pacific, **L. B. Porter,** signal engineer, at Milwaukee, Wis., has taken over the additional duties of assistant superintendent of telegraph, to succeed **A. C. Adams,** deceased. **E. A. Patterson** continues as superintendent of telegraph at Milwaukee.

E. B. Fithian, division engineer of the Wichita division of the Missouri Pacific, with headquarters at Wichita, Kan., has had his jurisdiction extended to include the Joplin-White River divisions, and **J. H. McFadden,** division engineer of these divisions, at Nevada, Mo., has been transferred to the Omaha-Northern Kansas division, with headquarters at Falls City, Neb., succeeding **R. G. Bush,** who has been assigned to other duties. **J. R. Nagel,** division engineer of the Missouri and St. Louis Terminal divisions, at St. Louis, Mo., has been transferred to the Eastern division, at Jefferson City, Mo., where he replaces **A. P. Morrison,** who has retired. **C. E. Cherry,** division engineer of the Illinois division, at St. Louis, has had his jurisdiction extended to include the St. Louis Terminal division, and **A. B.**

Chaney, division engineer of the Memphis division at Wynne, Ark., has had his jurisdiction extended to include the Missouri division, and hereafter will have headquarters at Poplar Bluff, Mo.

MECHANICAL

W. H. Duxbury, acting master mechanic of the Halifax division of the Canadian National, has been appointed master mechanic with headquarters at Halifax, N. S.

G. B. Pauley, assistant master mechanic on the Chicago, Burlington & Quincy, with headquarters at Sterling, Colo., has been transferred to Sheridan, Wyo., where he succeeds **H. E. Felter,** who has been transferred. The position of assistant master mechanic at Sterling has been abolished.

James Hall, master car repairer at the general shops of the Southern Pacific at Sacramento, Cal., will retire on February 28, after 46 years service with this company. Mr. Hall was born in London, England, on February 21, 1863 and first entered railway service on February 1, 1876, as an apprentice in the car shops of the Sheffield & Lincolnshire Railroad at Manchester, England. In 1886, he migrated to the United States and on May 12 of the following year he entered the service of the Southern Pacific at Oakland, Cal. In August, 1899, he became a passenger car builder in the general shops at Sacramento, being appointed gang foreman of the platform department on March 1, 1900. On March 1, 1904, Mr. Hall was appointed assistant general foreman of the car department of the general shops and on August 6, 1912, he was advanced to master car repairer of the Coast division. On March 15, 1917, he was transferred to the general shops at Sacramento, where he has served continuously since that time.

OBITUARY

D. T. Murray, who retired on January 1, 1932, as general agent for the New York Central at Youngstown, Ohio, died on February 4, at the age of 79. At the time of his retirement Mr. Murray had a record of 67 years of continuous service with the New York Central.

James H. Foster, resident assistant to the traffic and operating vice-presidents of the Chicago, Milwaukee, St. Paul & Pacific at Minneapolis, Minn., and formerly general superintendent of the Northern district of this road, died at his home at Minneapolis, on January 12. Mr. Foster was born on April 12, 1860, at Waukesha, Wis., and entered railway service with the Milwaukee in 1873 as a telegrapher, serving this company continuously until his death. He was promoted through various positions in station service and also served as a dispatcher until 1891, when he was promoted to trainmaster of the River division. Five years later he was advanced to superintendent of the Aberdeen division, and served in this capacity on various divisions until 1907, when he was appointed assistant general superintendent at Minneapolis. In 1912, Mr. Foster was promoted to general superintendent of the Northern district, which position he held until 1923, when he was given the title of resident assistant to vice-presidents, with headquarters at Minneapolis.

Nathan G. Campbell, assistant freight traffic manager of the Central of New Jersey, died suddenly on February 2, following a week's illness. Mr. Campbell was born at Shamokin, Pa., in 1880. He entered railroad service as a stenographer

Nathan G. Campbell

with the Reading in 1897 and in 1902, Mr. Campbell became associated with the New Jersey Central in a similar capacity. On April 1, 1907, he was appointed assistant trainmaster at Northampton, Pa., and in December of that year he became general agent at Wilkes Barre, Pa. On November 15, 1910, Mr. Campbell was appointed trainmaster of the Lehigh and Susquehanna division at Mauch Chunk, Pa., and on February 1, 1914, he became general agent at Newark, N. J. On January 1, 1924, Mr. Campbell was appointed assistant freight traffic manager, the position he held until his death.

Charles D. Emmons, president of the Hudson & Manhattan, died following a heart attack on February 1. Mr. Emmons was born on February 13, 1871, at LaFayette, Ind., and received his higher education at the Western University of Pennsylvania (now the University of Pittsburgh), from which he was graduated in 1892 with the degree of Civil Engineer. During the following nine years, Mr. Emmons served in the engineering department of the Pennsylvania, and from 1901 to 1903 held the position of general manager of the Ft. Wayne & Wabash Valley Street Railway Company. In the succeeding four years he was associated with the Chicago, South Bend & Northern Indiana. In 1916, Mr. Emmons became vice-president and general manager of the Boston & Worcester Street Railway Company, and in 1918 general manager of the Boston (Mass.) Elevated Railway Company. From 1919 until 1930, he was president of the United Railways & Electric Company, of Baltimore, Md. He also served as an officer of other Baltimore traction companies. In 1922-23, Mr. Emmons was president of the American Electric Railway Association. He was elected president of the Hudson & Manhattan on September 1, 1930, the position he held until his death.

Charles D. Emmons

John Davis Caldwell, vice-president, secretary, assistant treasurer and a director of the Chicago & North Western and secretary of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at Chicago, died at his home at Oak Park, Ill., (a suburb of Chicago) on February 5. Mr. Caldwell had been in railway service for 53 years and had served the North Western continuously for the last 48 years.

John Davis Caldwell

He was born on July 4, 1863, at Lynn, Mass., and entered railway service in 1880 as a telegraph operator on the Pennsylvania. Three years later he left this road to become secretary to the superintendent of motive power of the Denver & Rio Grande. After two years with this company, he entered the service of the North Western as secretary to the president and chairman, holding this position until 1909, when he was elected secretary of the road, with headquarters as before at Chicago. From the same year until 1915, Mr. Caldwell served also as a director of the Chicago, St. Paul, Minneapolis & Omaha. In 1910, he was elected also secretary of the Omaha and in 1919, he became, in addition assistant treasurer of the North Western. In 1926, Mr. Caldwell was elected a director of the North Western in addition to his other duties and two years later he took over the further duties of vice-president, continuing in these various capacities until his death.

Tables of Revenues and Expenses of Railways begin on next left-hand page

IMPROVED SERVICE

through improved motive power

When railroad freight trains travelled 15 miles per hour and a shipment from New York to Chicago was a matter of weeks there was an opening for competing modes of transportation that promised better service. « But the freights of today travel at passenger train speed. Door-to-door, overnight service is common among progressive roads. « Lima Super-Power Locomotives have played an important part in bringing about this change. They provide the increased power that makes possible the service demanded by industry and they do this at a far lower cost than the locomotives built a few years ago. « "Improved service" need no longer be the plea of competing modes of transportation that are enjoying public subsidies.

LIMA LOCOMOTIVE WORKS • Incorporated • LIMA, OHIO

Revenues and Expenses of Railways

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1932

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1931
Akron, Canton & Youngstown	Dec.	171	$111,385	$27	$116,647	$12,801	$11,826	$9,186	$37,597	$10,141	$81,381	69.8	$35,266	$22,984	$13,056	—$3,957
	12 mos.	171	1,485,874	611	1,564,496	190,881	172,327	118,619	480,854	128,098	1,080,221	69.0	484,275	341,401	223,112	252,045
Alton	Dec.	978	709,228	171,011	1,030,416	85,346	120,166	51,779	445,901	45,932	762,106	74.0	268,310	155,850	35,450	40,266
	12 mos.	1,001	10,417,588	2,044,609	14,090,370	1,586,875	1,728,395	731,945	5,799,096	574,447	10,587,960	75.1	3,502,410	2,188,731	486,783	450,273
Alton & Southern	Dec.	31	.....	.....	76,450	9,692	5,719	5,366	29,363	3,218	53,358	69.79	23,092	18,237	14,940	2,441
	12 mos.	31	.....	.....	903,912	85,655	71,618	62,733	317,099	56,472	593,577	65.67	310,335	258,728	226,627	212,303
Atchison, Topeka & Santa Fe	Dec.	9,715	5,911,509	1,003,555	7,911,301	674,950	2,003,130	334,852	2,936,476	432,133	6,657,595	84.2	1,253,706	653,722	725,387	1,290,661
	12 mos.	9,723	86,641,623	13,522,939	109,893,450	12,253,529	26,394,173	4,064,654	36,300,512	4,716,147	83,928,129	76.4	25,965,321	14,669,488	16,026,699	28,253,449
Gulf, Colorado & Santa Fe	Dec.	1,955	1,196,047	57,711	1,327,368	142,309	244,483	51,421	367,992	66,294	863,584	65.1	463,784	420,610	325,723	—283,235
	12 mos.	1,955	13,196,168	609,940	14,675,148	1,697,456	3,188,845	622,023	4,987,728	849,647	11,326,171	77.2	3,348,977	2,333,496	1,265,684	1,455,792
Panhandle & Santa Fe	Dec.	1,878	687,770	36,622	782,480	59,155	165,953	19,497	234,896	38,220	509,718	65.1	272,762	254,491	173,151	—62,466
	12 mos.	1,878	7,562,422	387,927	8,564,940	1,391,529	1,953,586	234,052	2,708,763	396,679	6,664,022	77.8	1,900,918	1,349,693	367,411	1,740,033
Atlanta & West Point	Dec.	93	52,307	18,727	89,052	17,458	23,463	7,245	46,562	8,593	105,254	118.2	—16,202	—5,752	—18,383	—52,203
	12 mos.	93	837,151	222,791	1,263,274	217,146	278,878	95,826	613,782	104,023	1,342,343	106.3	—79,069	—181,028	—323,419	—150,385
Western of Alabama	Dec.	133	56,501	19,704	90,034	21,223	29,912	7,233	39,944	7,520	107,446	119.3	—17,412	15,968	23,717	—40,828
	12 mos.	133	847,254	236,788	1,233,228	230,724	347,943	96,397	558,197	101,168	1,362,276	110.5	—129,048	—212,156	—151,163	—6,326
Atlanta, Birmingham & Coast	Dec.	639	153,756	6,049	187,514	41,424	49,589	20,992	92,452	15,188	230,399	122.9	—42,885	—47,693	—53,753	—82,914
	12 mos.	639	2,027,152	68,672	2,408,776	583,712	703,937	259,970	1,148,935	201,300	3,005,544	124.8	—596,768	—756,961	—864,538	—953,258
Atlantic Coast Line	Dec.	5,144	2,529,331	356,827	3,282,151	366,978	632,313	129,915	1,201,720	135,132	2,490,417	75.9	791,734	637,030	546,032	521,746
	12 mos.	5,144	28,669,068	4,622,456	37,268,564	5,809,114	8,205,504	1,497,697	14,795,164	1,672,262	32,270,877	86.6	4,997,687	1,009,089	108,199	4,748,109
Charleston & Western Carolina	Dec.	342	118,386	1,258	123,806	22,959	17,795	5,410	51,375	4,735	102,274	82.6	21,532	13,049	19,292	—4,695
	12 mos.	342	1,566,235	17,257	1,633,908	262,986	278,278	73,463	628,196	62,676	1,305,533	79.9	328,375	149,382	167,692	359,240
Baltimore & Ohio	Dec.	6,401	8,308,208	785,353	9,863,736	658,089	1,758,820	305,519	3,703,569	543,955	7,043,224	71.4	2,820,512	2,064,706	1,841,587	813,328
	12 mos.	6,397	106,060,060	10,362,683	125,882,824	10,317,522	22,157,472	4,734,047	46,343,123	7,153,929	91,654,936	72.8	34,227,888	25,272,333	21,973,398	27,752,398
Baltimore & Ohio Chic. Term	Dec.	84	.....	.....	251,153	406	116,254	1,832	171,899	15,260	311,343	124.0	—60,190	—99,262	—64,735	53,641
	12 mos.	84	.....	.....	3,223,214	260,165	518,239	21,722	1,746,312	193,445	2,802,339	86.9	420,875	—38,832	927,533	815,025
Staten Island Rapid Transit	Dec.	23	57,174	86,027	150,110	9,568	14,399	1,921	80,086	13,458	119,432	79.6	30,678	12,986	—9,664	117
	12 mos.	23	564,898	1,149,055	1,804,889	95,084	157,293	22,620	964,590	164,389	1,403,976	77.8	400,913	182,296	—9,762	159,660
Bangor & Aroostook	Dec.	619	428,729	19,123	468,117	53,065	101,919	4,822	118,700	23,546	302,684	64.7	165,433	125,716	118,382	105,958
	12 mos.	619	5,432,727	224,032	5,911,877	996,876	1,110,199	54,688	1,447,858	305,358	3,926,588	66.4	1,985,289	1,484,079	1,465,499	1,388,817
Belt Ry. Co. of Chicago	Dec.	53	.....	.....	283,635	15,309	34,541	2,488	148,649	10,382	211,369	74.5	72,266	52,710	141,424	154,499
	12 mos.	53	.....	.....	3,927,472	259,798	392,717	34,944	1,943,924	117,366	2,748,749	70.0	1,178,723	713,355	1,367,921	1,304,811
Bessemer & Lake Erie	Dec.	225	222,418	1,087	231,464	52,131	223,570	10,796	101,277	38,236	426,042	184.1	—194,578	—218,965	—211,446	—79,413
	12 mos.	226	3,654,310	14,964	3,748,396	650,678	2,063,774	136,745	1,299,516	474,096	4,624,423	123.4	—876,027	—1,148,578	—1,118,701	2,373,536
Boston & Maine	Dec.	2,085	2,279,019	634,718	3,525,261	96,459	586,547	64,256	1,422,407	175,276	2,353,912	66.8	1,171,349	911,570	760,910	732,236
	12 mos.	2,091	29,784,949	8,109,168	45,087,754	5,504,943	6,973,835	850,506	17,289,912	2,188,591	32,943,668	73.1	12,144,086	9,274,403	7,366,344	9,894,768
Brooklyn Eastern Dist. Term	Dec.	11	56,355	.....	56,799	3,903	12,156	226	22,721	6,516	45,524	77.4	13,275	6,956	6,956	16,389
	12 mos.	11	840,072	.....	851,199	53,036	116,771	2,640	271,525	72,504	516,476	60.7	334,723	254,753	254,753	401,717
Burlington-Rock Island	Dec.	280	74,431	1,273	80,211	9,011	10,712	3,013	44,282	7,865	74,883	93.4	5,328	5,744	—12,827	—341,284
	12 mos.	302	948,815	16,655	1,023,736	180,845	120,595	48,206	461,839	99,013	909,654	88.9	114,082	49,935	—109,283	—453,414
Cambria & Indiana	Dec.	37	118,821	.....	119,020	6,156	34,536	341	13,335	14,355	68,723	57.74	50,297	29,587	103,404	79,978
	12 mos.	37	1,123,531	.....	1,126,186	92,016	437,581	4,799	139,098	105,758	779,252	69.19	346,934	180,981	842,451	922,479
Canadian Pac. Lines in Maine	Dec.	233	156,274	21,427	190,292	22,919	21,130	3,717	81,621	4,345	133,732	70.2	56,560	54,866	23,074	—9,147
	12 mos.	233	1,339,141	205,121	1,681,647	543,090	301,738	53,669	751,630	47,325	1,697,452	100.9	—15,805	—110,449	—350,791	—463,741
Canadian Pac. Lines in Vermont	Dec.	85	34,155	11,367	60,283	7,995	8,481	1,676	54,050	2,881	75,083	124.5	—14,800	—22,897	—42,726	—39,778
	12 mos.	85	652,609	168,974	1,036,462	214,845	224,363	24,106	669,244	34,468	1,167,026	112.6	—130,564	—197,341	—448,412	—465,063
Central of Georgia	Dec.	1,944	614,477	83,963	814,106	103,955	187,731	48,248	401,635	67,377	811,129	99.6	2,977	—25,032	—68,628	—93,340
	12 mos.	1,944	9,116,300	1,097,364	11,547,648	1,427,497	2,290,480	641,723	5,156,746	845,643	10,422,516	90.3	1,125,132	—32,597	—271,874	1,581,563
Central New Jersey	Dec.	691	1,902,204	369,320	2,461,887	116,389	626,644	40,276	958,674	97,055	1,852,688	75.3	609,199	211,052	133,515	458,468
	12 mos.	692	22,882,999	5,354,321	30,357,469	2,306,481	5,768,363	604,440	12,182,201	1,140,202	22,182,692	73.1	8,174,777	3,307,257	2,507,298	4,224,783
Central Vermont	Dec.	457	289,838	38,382	374,339	55,357	33,771	11,824	180,482	19,152	300,818	80.4	73,521	63,405	63,141	37,574
	12 mos.	457	4,119,483	528,159	5,234,570	958,500	936,823	183,864	2,378,749	246,263	4,707,007	89.9	527,563	325,540	211,470	681,389
Chesapeake & Ohio	Dec.	3,144	7,601,311	217,145	8,110,340	537,573	1,717,197	152,598	1,885,167	284,040	4,590,596	56.6	3,519,744	2,836,076	2,774,762	1,694,453
	12 mos.	3,144	92,115,126	2,691,277	98,725,860	10,382,495	16,873,477	1,883,726	23,080,948	3,553,799	55,965,116	56.7	42,760,744	33,402,328	32,502,269	35,329,943
Chicago & Eastern Illinois	Dec.	938	807,677	105,500	1,020,995	124,966	174,597	43,874	458,908	54,379	861,035	84.3	159,960	67,592	—64,961	—157,864
	12 mos.	938	9,819,162	1,179,967	12,189,973	1,587,232	2,151,415	696,052	5,435,627	694,226	10,646,392	87.3	1,543,581	256,794	—1,283,337	—1,700,501

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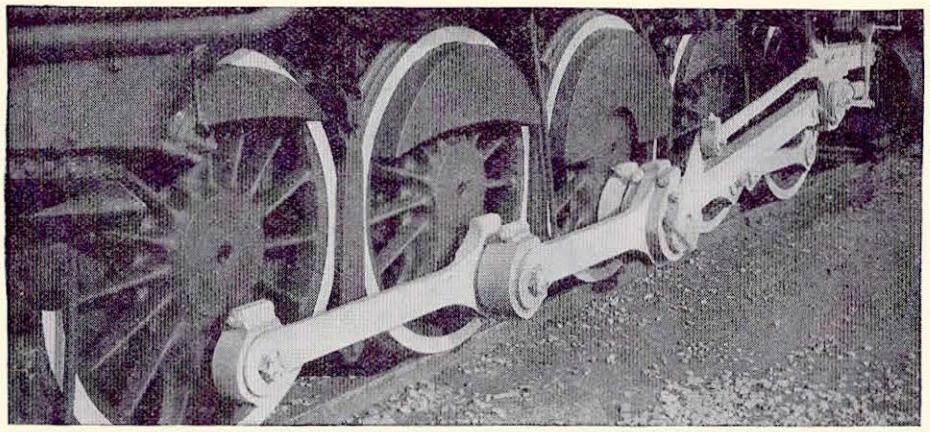

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One road that ran a test on 2-10-2 locomotives under similar operating conditions reported that the Tandem Main Rod Drive reduced rod maintenance from $0.018 per mile to $0.003, saving $0.015 per mile and reducing expense 83.3%.

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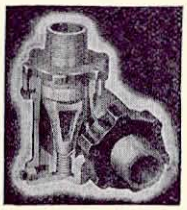

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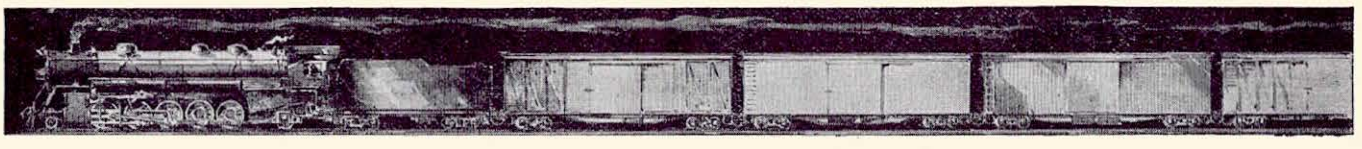

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO MONTREAL

Revenues and Expenses of Railways

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1932—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1931
Chicago & Illinois Midland	Dec.	131	$229,433	$1,449	$238,526	$31,653	$34,638	$17,896	$72,806	$11,050	$168,043	70.5	$70,483	$57,713	$66,181	$47,836
	12 mos.	131	1,957,813	17,080	2,058,561	207,409	427,798	214,099	635,575	186,154	1,670,036	81.1	388,525	282,437	231,512	470,195
Chicago & North Western	Dec.	8,442	3,848,841	800,053	5,392,395	527,567	1,104,554	159,737	2,343,331	268,052	4,438,662	82.3	953,733	572,177	374,581	207,944
	12 mos.	8,442	53,872,880	10,012,593	72,491,521	10,171,867	14,016,140	1,967,018	30,619,796	3,393,248	60,604,420	83.6	11,887,101	4,469,363	1,422,836	6,272,136
Chicago, Burlington & Quincy	Dec.	9,248	4,573,801	572,924	5,955,778	621,090	1,047,293	190,750	2,390,366	297,658	4,592,379	77.1	1,363,399	752,619	641,775	726,918
	12 mos.	9,261	63,182,739	7,311,279	79,543,629	9,576,465	13,341,550	2,536,072	28,952,904	3,532,451	58,517,604	73.6	21,026,025	12,846,693	9,592,497	20,506,918
Chicago Great Western	Dec.	1,499	996,036	50,649	1,139,059	224,282	221,440	52,876	381,616	48,389	927,321	81.4	211,738	170,584	—36,014	175,386
	12 mos.	1,492	13,410,073	690,517	15,159,400	2,380,745	2,017,291	715,168	5,826,723	654,954	11,615,250	76.6	3,544,150	2,719,622	403,778	2,571,094
Chicago, Indianapolis & Louisville	Dec.	647	481,382	55,413	614,785	11,635	133,444	23,801	229,278	22,613	420,650	68.4	194,135	186,419	101,019	3,901
	12 mos.	644	6,340,639	644,349	7,916,338	701,933	1,709,228	310,300	3,361,714	311,401	6,457,415	81.6	1,458,923	977,407	—111,763	177,314
Chicago, Mil., St. Paul & Pacific	Dec.	11,242	5,298,640	502,207	6,581,513	516,267	1,488,705	216,177	2,742,640	285,866	5,255,043	79.8	1,326,470	715,722	287,475	594,231
	12 mos.	11,262	70,302,779	5,947,700	84,900,833	13,446,229	18,683,044	2,812,759	33,545,311	3,481,174	72,078,119	84.9	12,822,714	4,866,813	—518,116	8,334,406
Chicago River & Indiana	Dec.	20	.....	.....	337,300	13,892	19,424	1,333	107,552	13,860	156,061	46.3	181,239	203,177	258,695	234,690
	12 mos.	20	.....	.....	4,314,996	216,892	282,424	17,407	1,402,919	152,614	2,072,256	48.0	2,242,740	1,937,814	2,616,526	2,868,999
Chicago, Rock Island & Pacific	Dec.	7,611	3,745,435	557,167	4,882,313	454,504	1,040,867	175,077	2,195,325	266,469	4,194,934	85.9	687,379	448,268	247,561	—284,024
	12 mos.	7,618	53,320,768	6,577,918	66,783,779	6,293,716	13,415,215	2,337,387	27,394,773	3,364,939	53,624,375	80.3	13,159,404	7,504,955	3,650,879	11,106,338
Chicago, Rock Island & Gulf	Dec.	721	265,938	20,930	258,590	28,161	35,581	16,570	108,570	18,447	210,085	81.2	48,505	36,034	—27,604	119,011
	12 mos.	721	3,768,839	284,792	3,996,248	436,700	406,117	205,488	1,407,523	226,575	2,717,048	68.0	1,279,200	1,020,517	397,350	1,817,669
Chic., St. Paul, Minn. & Omaha	Dec.	1,736	882,020	128,182	1,116,000	97,097	146,188	30,569	478,716	63,757	820,732	73.5	295,268	226,039	167,994	—104,617
	12 mos.	1,736	11,852,866	1,647,602	14,831,762	2,380,676	2,636,316	396,104	6,787,698	764,806	13,039,865	87.9	1,791,897	824,365	—10,892	123,972
Clinchfield R. R.	Dec.	309	387,066	2,515	394,218	21,123	61,645	14,235	72,308	11,422	180,733	45.8	213,485	178,458	194,263	78,206
	12 mos.	309	3,974,454	26,818	4,059,463	459,740	1,021,413	188,744	836,870	164,032	2,670,470	65.8	1,388,993	668,506	857,618	1,460,070
Colorado & Southern	Dec.	1,030	314,837	25,527	395,244	45,140	96,315	14,970	171,723	34,093	358,731	90.8	36,513	21,468	9,105	95,444
	12 mos.	1,031	4,517,055	336,346	5,451,108	804,432	1,297,722	152,776	2,077,641	391,658	4,648,442	85.3	802,666	122,594	—65,581	714,407
Ft. Worth & Denver City	Dec.	804	378,111	41,501	520,070	36,058	69,218	15,800	149,621	33,194	304,682	58.6	215,388	209,049	187,062	137,631
	12 mos.	749	4,671,949	478,214	6,003,759	585,303	898,051	199,506	1,815,449	400,005	3,671,303	61.2	2,332,456	2,006,925	1,657,174	2,240,033
Columbus & Greenville	Dec.	167	51,067	6,504	62,733	27,023	11,140	2,820	27,973	9,599	78,518	125.2	—15,785	—30,531	—29,670	1,384
	12 mos.	167	639,379	57,821	748,700	227,318	131,467	37,031	303,946	122,522	821,056	109.7	—72,356	—102,964	—81,955	87,235
Conemaugh & Black Lick	Dec.	20	7,983	.....	17,569	1,250	5,267	279	9,924	4,608	21,328	121.4	—3,759	—1,461	—778	—12,457
	12 mos.	20	131,589	.....	311,223	49,934	86,270	4,202	196,511	43,915	380,832	122.4	—69,609	—70,811	—57,577	—3,158
Delaware & Hudson	Dec.	854	1,670,365	86,502	1,881,559	309,624	549,933	48,260	799,769	136,908	1,848,191	98.2	33,368	10,025	30,933	160,644
	12 mos.	854	20,117,971	1,392,389	23,225,154	3,650,922	6,486,406	609,988	9,750,214	1,702,633	22,255,109	95.8	970,045	17,109	15,538	4,279,682
Delaware, Lackawanna & Western	Dec.	998	2,498,579	617,999	3,670,416	248,033	751,436	109,018	1,656,990	163,510	2,946,263	80.3	724,153	445,843	435,105	542,864
	12 mos.	998	32,347,465	7,407,091	46,447,856	4,338,501	9,037,525	1,431,913	20,072,012	1,868,374	37,055,579	79.8	9,392,277	4,170,579	4,011,954	7,241,204
Denver & Rio Grande Western	Dec.	2,513	1,253,044	64,850	1,407,524	36,523	247,684	44,739	474,946	76,243	882,601	62.7	524,923	374,109	375,059	337,090
	12 mos.	2,531	15,357,545	1,035,979	17,560,621	1,822,743	3,619,224	556,850	5,690,026	927,945	12,710,507	72.4	4,850,114	2,939,752	2,814,269	5,137,991
Denver & Salt Lake	Dec.	232	185,400	5,810	204,956	7,806	23,219	1,407	29,944	7,084	69,315	33.8	135,641	136,410	137,294	62,493
	12 mos.	232	1,710,668	64,917	1,915,469	246,893	294,125	20,150	321,236	116,466	979,699	51.1	935,770	773,445	812,425	859,359
Detroit & Mackinac	Dec.	242	31,607	3,330	42,078	6,009	6,711	1,150	22,495	3,623	39,986	95.0	2,092	—3,746	—3,795	—12,098
	12 mos.	242	639,584	35,249	759,895	136,571	121,996	15,103	284,184	49,118	606,788	79.9	153,107	102,752	103,974	188,803
Detroit & Toledo Shore Line	Dec.	50	255,371	.....	257,067	21,046	17,518	6,147	56,251	9,406	110,368	42.9	146,699	120,510	74,756	49,916
	12 mos.	50	2,282,676	.....	2,303,580	209,011	255,703	84,893	610,731	82,534	1,242,199	53.9	1,061,381	826,095	368,857	444,501
Detroit Terminal	Dec.	19	.....	.....	52,101	4,500	7,545	.....	21,184	2,660	35,889	68.9	16,212	5,876	9,831	—18,671
	12 mos.	19	.....	.....	601,579	67,105	90,995	49	325,401	34,774	518,324	86.2	83,255	—58,310	—92,282	—100,361
Detroit, Toledo & Ironton	Dec.	473	307,241	398	315,603	23,717	49,125	9,139	98,904	17,705	197,777	62.7	117,826	78,693	56,573	25,370
	12 mos.	486	4,012,692	4,707	4,130,256	500,483	782,639	130,947	1,389,507	246,581	3,040,488	73.6	1,089,768	571,079	474,254	954,712
Duluth, Missabe & Northern	Dec.	563	47,765	1,613	64,779	72,035	163,933	3,267	118,623	42,301	400,156	617.7	—335,377	—342,618	—333,814	—346,537
	12 mos.	563	2,014,026	19,309	2,374,934	1,027,714	1,724,544	37,358	1,508,387	486,518	4,784,318	201.5	—2,409,384	—2,535,330	—2,524,823	2,741,254
Duluth, Winnipeg & Pacific	Dec.	178	48,436	2,283	54,350	16,486	26,414	Cr. 2,572	36,518	4,958	81,753	150.4	—27,403	—29,433	—9,358	1,679
	12 mos.	178	747,794	39,762	841,099	255,828	247,984	30,745	455,512	65,944	1,062,342	126.3	—221,243	—264,212	—53,065	—320,900
Elgin, Joliet & Eastern	Dec.	447	546,546	2	588,445	46,784	157,762	11,210	286,208	47,049	549,005	93.3	39,440	—16,141	—59,746	—149,545
	12 mos.	447	7,169,475	26	7,764,089	962,703	1,870,097	150,565	3,539,587	650,786	7,173,469	92.4	590,620	—606,380	—1,016,847	—8,411
Erie Railroad	Dec.	2,046	4,185,934	476,358	5,197,180	321,161	1,416,343	132,567	2,024,611	227,501	4,137,761	79.6	1,059,419	922,679	790,383	473,352
	12 mos.	2,046	52,961,676	5,963,739	64,841,762	6,982,726	13,862,376	1,687,231	24,288,189	2,969,009	50,031,273	77.2	14,810,489	10,421,020	8,663,538	9,854,051
Chicago & Erie	Dec.	269	638,068	19,841	711,285	93,013	124,740	21,967	234,724	32,435	506,097	71.2	205,188	251,063	51,816	24,098
	12 mos.	269	8,017,102	265,101	8,904,312	1,203,617	1,360,057	286,838	2,562,984	407,357	5,816,540	65.3	3,087,772	2,667,372	166,808	498,051

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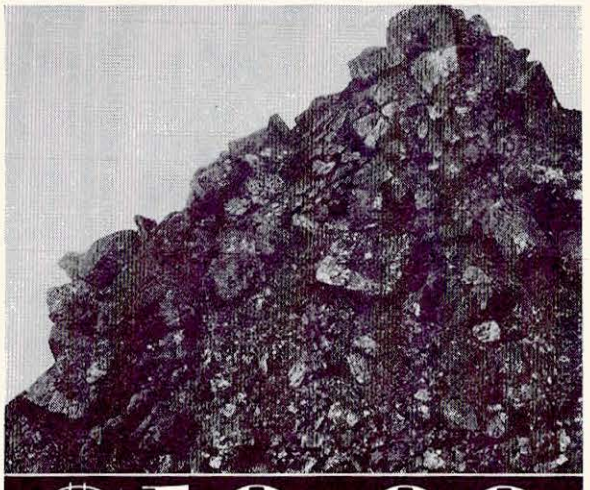
THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

"SAVE" $1.00

AND



LOSE $10.00

"Economy" that tries to save $1.00 in one direction at a cost of $10.00 in another direction loses the railroad $9.00 net.

Leaving off the last course of Arch brick may seem like an easy way to cut expenses but for every $1.00 of Arch brick thus saved, an extra $10.00 has been spent for fuel.

Economy does not lie in this direction.

It does lie in getting the maximum usefulness out of every fuel-saving, economy-producing element. This means that every locomotive Arch should be carried full length.

HARBISON-WALKER REFRACTORIES CO.
Refractory Specialists

AMERICAN ARCH CO.
INCORPORATED
Locomotive Combustion Specialists

Revenues and Expenses of Railways

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1932—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1931
New Jersey & New York	Dec.	45	$19,992	$69,160	$92,343	$21,968	$26,622	$1,558	$51,802	$4,729	$106,679	115.5	—$14,336	—$19,321	—$39,724	—$27,312
	12 mos.	45	208,669	862,793	1,103,750	125,871	292,779	17,885	591,369	41,840	1,069,763	96.9	33,987	—27,179	—263,251	—211,548
N. Y. Susquehanna & Western	Dec.	131	273,628	27,631	323,757	9,428	54,523	4,515	122,990	10,870	202,326	62.5	121,431	100,765	83,801	18,883
	12 mos.	131	2,938,614	357,124	3,522,186	351,305	609,732	54,488	1,360,761	130,043	2,505,745	71.1	1,016,441	655,254	475,251	478,006
Florida East Coast	Dec.	839	391,356	104,856	583,651	109,201	143,986	21,157	167,028	31,884	476,324	81.6	107,327	115,965	91,986	250,601
	12 mos.	858	4,259,596	1,545,508	6,720,794	1,301,742	1,612,033	257,076	1,987,903	473,976	5,701,051	84.8	1,019,743	153,044	—281,776	664,636
Fort Smith & Western	Dec.	249	44,902	1,709	50,280	12,072	12,461	5,116	21,398	3,821	55,027	109.4	—4,747	—6,652	—6,525	—1,566
	12 mos.	249	623,776	14,202	685,187	163,793	125,950	57,503	259,694	56,573	664,207	96.9	20,980	—10,558	—62,238	—112,002
Galveston Wharf	Dec.	11	.....	.....	114,550	Cr. 946	4,076	3,169	28,521	5,154	44,915	39.2	69,633	47,725	47,720	79,881
	12 mos.	11	.....	.....	1,618,564	432,214	51,748	41,427	284,023	72,596	1,013,107	62.6	605,457	322,268	322,168	517,623
Georgia R. R.	Dec.	329	170,859	16,301	213,413	27,284	49,892	16,538	104,414	13,180	225,240	105.5	—11,827	—12,309	4,212	—4,119
	12 mos.	329	2,431,172	193,101	2,862,177	393,835	553,224	216,151	1,343,933	184,754	2,696,472	94.2	165,705	91,501	241,888	545,104
Georgia & Florida	Dec.	463	48,003	1,384	54,206	18,378	10,924	7,360	30,084	4,840	71,543	132.0	—17,337	4,957	3,057	—25,054
	12 mos.	463	743,246	18,840	818,829	218,620	182,972	101,210	382,271	75,720	962,479	117.5	—143,650	—188,422	—200,009	—92,091
Grand Trunk Western	Dec.	1,023	950,105	64,430	1,111,122	130,658	256,317	Cr. 27,234	536,399	82,700	981,739	88.4	129,383	41,839	—40,106	—245,142
	12 mos.	1,022	11,994,548	787,227	13,912,792	2,036,537	3,120,683	474,182	6,984,528	1,050,470	13,727,566	98.7	185,226	—935,753	—2,031,097	—1,919,135
Canadian Nat'l Lines in New Eng.	Dec.	172	54,915	6,771	72,559	12,708	21,901	1,515	47,902	9,639	96,135	132.5	—23,576	—40,280	—72,267	—147,670
	12 mos.	172	911,600	101,208	1,166,816	264,081	247,166	40,600	720,612	109,245	1,410,264	120.9	—243,448	—404,798	—906,207	—1,154,766
Great Northern	Dec.	8,457	3,155,425	344,972	4,055,775	400,070	923,315	214,895	1,620,417	168,624	3,361,712	82.9	694,063	490,456	422,653	896,822
	12 mos.	8,408	45,960,600	3,941,659	55,549,246	7,771,028	12,428,089	2,177,887	20,592,335	2,284,343	45,655,672	82.2	9,893,574	3,181,940	1,290,551	12,669,420
Green Bay & Western	Dec.	234	93,134	1,455	97,669	Cr. 2,009	8,420	4,343	33,859	2,915	47,087	48.2	50,582	39,343	32,739	709
	12 mos.	234	1,114,783	15,973	1,166,241	223,397	175,926	53,782	483,651	31,822	967,419	72.9	198,822	122,080	93,033	146,643
Gulf & Ship Island	Dec.	307	58,100	11,661	78,616	10,121	14,028	2,589	46,079	5,208	78,025	99.2	591	—17,372	—24,664	31,379
	12 mos.	307	779,664	115,416	1,034,915	124,439	171,859	36,380	586,430	70,746	992,613	95.9	42,302	—166,838	—280,280	—365,437
Gulf, Mobile & Northern	Dec.	733	199,770	11,872	230,730	32,675	52,885	22,088	95,434	17,254	220,336	95.50	10,394	—2,608	—25,008	32,474
	12 mos	733	2,831,434	118,152	3,151,651	471,969	666,426	268,851	1,168,948	211,215	2,787,409	88.44	364,242	105,680	—132,335	166,003
Illinois Central	Dec.	5,014	5,124,462	686,282	6,327,701	256,940	1,330,519	176,727	2,415,080	311,003	4,517,327	71.4	1,810,374	1,318,580	1,323,062	1,347,467
	12 mos	5,016	62,909,724	8,250,193	77,745,558	6,471,159	15,759,347	2,231,333	29,117,814	3,777,618	57,786,838	74.3	19,958,720	13,777,236	12,434,934	11,421,469
Yazoo & Mississippi Valley	Dec.	1,673	580,331	84,061	749,802	5,192	129,895	27,859	408,723	50,146	622,591	83.0	127,211	—7,954	—87,488	183,112
	12 mos.	1,675	9,711,157	945,630	11,559,720	990,129	1,638,291	365,128	5,061,901	635,938	8,717,258	75.4	2,842,462	1,217,101	143,620	425,949
Illinois Central System	Dec.	6,687	5,704,793	770,343	7,077,503	262,132	1,460,414	204,586	2,823,803	361,149	5,139,918	72.6	1,937,585	1,310,626	1,235,574	1,530,579
	12 mos.	6,691	72,620,881	9,195,823	89,305,278	7,461,288	17,397,638	2,596,461	34,179,715	4,413,556	66,504,096	74.5	22,801,182	14,994,337	12,578,554	11,847,418
Illinois Terminal	Dec.	545	297,579	56,244	370,037	39,005	48,100	17,470	152,578	25,659	282,845	76.44	87,192	64,579	37,208	55,989
	12 mos.	543	3,666,557	668,792	4,551,048	582,004	595,721	190,492	1,736,563	272,383	3,366,303	73.97	1,184,745	906,079	580,768	1,367,977
Kansas City Southern	Dec.	783	538,441	22,960	652,416	73,545	131,358	38,809	247,249	63,933	556,710	85.3	95,706	74,092	58,737	40,339
	12 mos.	783	7,284,922	291,440	8,750,139	877,291	1,535,889	521,150	2,893,617	759,781	6,614,029	75.6	2,136,110	1,202,901	950,957	2,296,932
Texarkana & Ft. Smith	Dec.	99	60,005	1,459	74,076	7,199	15,753	7,880	31,218	8,333	71,717	96.8	2,359	—1,578	—19,781	—37,871
	12 mos.	99	948,965	18,897	1,125,298	142,081	106,841	74,185	353,141	104,060	797,787	70.9	327,511	234,769	6,977	322,496
Kansas, Oklahoma & Gulf	Dec.	326	145,242	631	148,309	21,003	14,694	9,535	37,776	8,249	98,425	66.4	49,884	40,267	26,968	176,527
	12 mos.	326	1,755,047	5,160	1,793,185	210,663	192,302	108,186	448,153	91,470	1,056,144	58.9	737,041	579,615	410,276	787,538
Lake Superior & Ishpeming	Dec.	160	24,417	131	26,515	15,080	11,896	483	15,760	11,472	54,691	206.3	—28,176	—37,341	—38,406	—46,134
	12 mos.	160	401,171	1,109	444,625	196,438	141,337	6,512	198,383	70,095	612,765	137.8	—168,140	—328,939	—342,442	41,142
Lake Terminal	Dec.	12	.....	.....	21,540	2,022	4,272	.....	13,238	2,596	22,128	102.7	—588	—2,506	—3,419	8,731
	12 mos.	12	.....	.....	352,958	31,014	47,384	.....	169,829	25,659	273,886	77.6	79,072	46,693	62,039	95,431
Lehigh & Hudson River	Dec.	96	123,264	284	131,355	8,040	17,663	3,090	52,766	7,553	89,112	67.8	42,243	31,807	17,801	—2,533
	12 mos.	96	1,477,813	5,355	1,579,504	185,599	242,924	37,981	565,330	93,820	1,125,612	71.3	453,892	304,424	146,472	213,748
Lehigh & New England	Dec.	228	256,680	474	259,448	27,303	54,038	4,582	94,365	16,445	196,726	75.8	62,722	130,326	137,954	142,062
	12 mos.	218	3,235,918	5,832	3,274,739	404,837	684,212	57,012	1,122,662	211,871	2,480,537	75.7	794,202	745,628	848,845	924,397
Lehigh Valley	Dec.	1,362	2,819,783	248,746	3,339,421	198,978	708,920	106,653	1,429,585	126,737	2,585,892	77.4	753,529	630,014	529,845	85,809
	12 mos.	1,362	32,474,361	2,823,744	38,739,138	3,166,566	8,612,862	1,400,664	16,811,737	1,509,840	31,686,181	81.8	7,052,957	4,377,206	3,210,368	4,601,720
Louisiana & Arkansas	Dec.	608	258,998	9,541	290,409	32,785	51,502	20,676	83,427	21,065	209,891	72.3	80,518	77,527	71,170	84,459
	12 mos.	608	3,649,030	112,974	4,055,834	610,086	676,253	248,116	1,078,827	232,771	2,846,216	70.2	1,209,618	813,702	793,034	1,460,968
Louisiana, Arkansas & Texas	Dec.	255	48,041	486	54,532	11,991	10,145	3,523	25,524	4,440	55,623	102.0	—1,091	—3,780	—15,459	—112
	12 mos.	227	608,930	5,749	682,495	156,931	84,495	42,328	247,646	51,888	582,694	85.4	99,801	64,436	—26,705	—84,608
Louisville & Nashville	Dec.	5,166	4,590,103	437,087	5,482,267	384,959	855,065	165,183	1,881,283	266,691	3,587,742	65.4	1,894,525	1,916,509	1,993,628	783,159
	12 mos.	5,240	53,567,886	5,176,918	63,920,024	8,721,928	13,283,719	2,057,602	23,782,560	3,416,707	51,614,492	80.7	12,305,532	7,775,485	8,278,090	9,519,324

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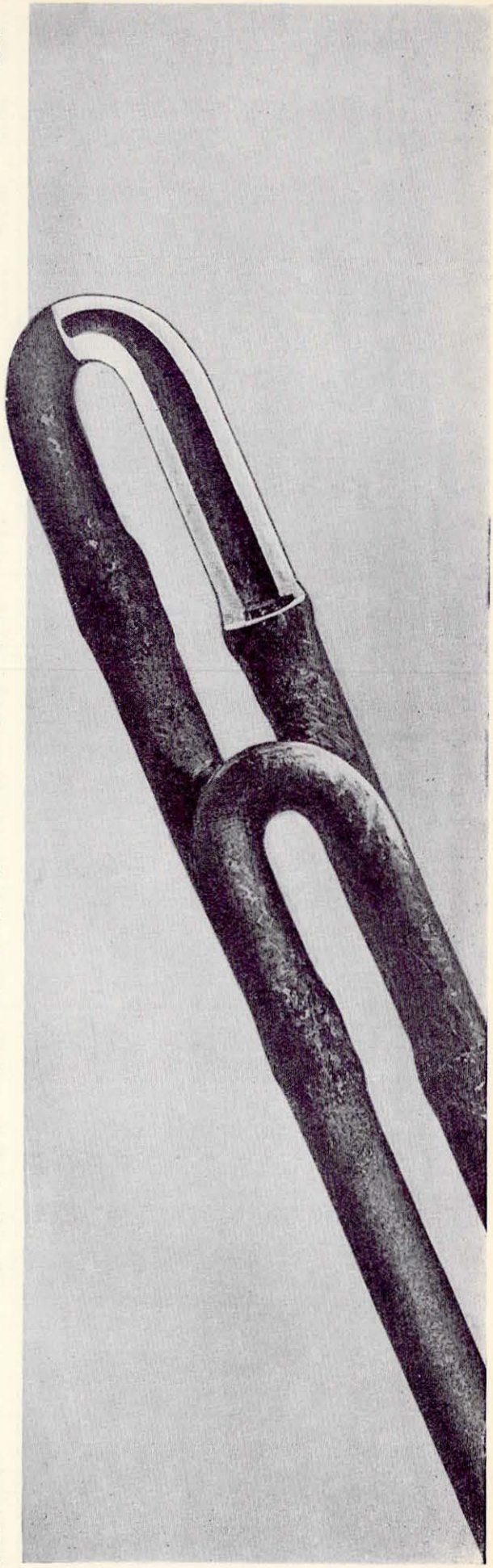
Photograph of a patch-repaired superheater unit



It is inconsistent . . .

to spend thousands of dollars rebuilding a locomotive in order to preserve it and keep it fit for useful service — and then re-install superheater units that have been merely patch-repaired . . . . equipment upon which so much depends for the satisfactory performance of the entire locomotive.

No parts of a locomotive boiler are more vital or in greater need of special care than are superheater units that have become unserviceable through years of severe operation. Repairing them is not enough. They should be rebuilt . . . . as is done by the Elesco unit remanufacturing service at our plant. This service definitely renews units for full-capacity, full-efficiency, trouble-free duty.

When you rebuild a locomotive don't take a chance with repaired units — have them rebuilt also . . . . through the Elesco unit remanufacturing service.

THE SUPERHEATER COMPANY

Representative of AMERICAN THROTTLE COMPANY, INC.

60 East 42nd Street, New York — Peoples Gas Building, Chicago

A-765

Canada: THE SUPERHEATER COMPANY, LTD., Montreal

Superheaters • Feed Water Heaters • Exhaust Steam Injectors
Superheated Steam Pyrometers • American Throttles

Revenues and Expenses of Railways

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1932—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of—Way and structures	Maintenance of—Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1931
Maine Central	Dec.	1,121	$665,448	$89,548	$859,133	$108,918	$135,236	$11,588	$354,310	$39,491	$649,526	75.6	$209,607	$170,850	$146,877	$55,366
	12 mos.	1,121	8,849,452	1,216,389	11,254,771	1,711,745	1,852,745	179,112	4,440,269	486,016	8,673,778	77.1	2,580,993	1,928,889	1,550,584	1,836,921
Midland Valley	Dec.	363	112,099	550	116,035	15,281	8,739	2,562	29,718	6,576	64,017	55.2	52,018	45,188	34,204	35,561
	12 mos.	363	1,465,254	8,460	1,518,478	219,044	157,983	41,169	372,458	88,057	874,570	57.6	643,908	525,015	432,058	516,853
Minneapolis & St. Louis	Dec.	1,627	532,473	20,350	594,772	67,588	140,002	30,242	298,377	36,631	572,143	96.2	22,629	—15,108	—36,076	—11,827
	12 mos.	1,627	7,088,372	246,501	7,854,700	1,189,170	1,609,816	368,052	3,792,273	488,386	7,444,038	94.8	410,662	—109,828	—396,105	111,706
Minn., St. Paul & S. S. Marie	Dec.	4,337	1,248,742	107,364	1,524,999	158,550	293,664	64,906	753,267	109,204	1,384,480	90.8	140,519	—6,306	—137,725	—148,516
	12 mos.	4,348	18,676,753	1,424,352	22,079,116	3,248,477	4,814,563	807,991	9,651,334	1,301,269	19,913,259	90.2	2,165,857	96,617	—1,547,931	280,984
Duluth, South Shore & Atlantic	Dec.	559	115,596	13,318	143,517	Cr. 2,435	31,320	6,310	71,780	6,992	115,227	80.3	28,290	1,231	—3,714	—60,797
	12 mos.	560	1,293,515	158,454	1,634,036	378,175	395,033	79,199	869,334	100,685	1,836,205	112.4	—202,169	—523,583	—567,046	—240,778
Spokane International	Dec.	163	23,690	1,765	30,013	1,618	5,818	2,545	20,633	4,359	35,004	116.6	—4,991	—9,045	—9,914	—7,801
	12 mos.	163	449,799	26,726	526,798	165,391	61,039	32,733	258,045	57,164	578,365	109.8	—51,567	—109,843	—135,274	—9,786
Mississippi Central	Dec.	150	35,441	1,774	39,249	7,450	8,620	6,179	16,238	5,447	43,919	111.9	—4,670	—7,244	—9,478	3,725
	12 mos.	150	569,695	16,696	609,782	89,813	132,231	88,564	214,165	65,568	590,318	96.8	19,464	—24,398	—67,472	135,257
Missouri & North Arkansas	Dec.	364	43,598	1,285	50,113	15,249	9,338	5,759	28,410	6,048	64,804	129.3	—14,691	—17,192	—25,434	—32,963
	12 mos.	364	758,613	15,749	838,829	193,677	125,387	87,007	352,620	84,727	841,697	100.3	—2,868	—32,558	—132,735	—124,437
Missouri-Illinois	Dec.	202	65,302	479	67,435	13,614	14,018	2,562	24,219	4,167	58,580	86.9	8,855	1,778	—3,875	5,265
	12 mos.	202	849,666	5,790	875,561	157,285	162,014	36,478	294,308	66,316	716,186	81.8	159,375	95,361	16,438	164,708
Missouri-Kansas-Texas Lines	Dec.	3,188	1,722,396	223,931	2,190,769	192,244	214,870	120,531	770,813	136,328	1,449,307	66.2	741,462	642,094	469,804	443,137
	12 mos.	3,188	22,023,263	2,281,122	27,110,879	3,037,730	3,668,866	1,350,800	9,297,533	1,601,581	19,129,007	70.6	7,981,872	5,755,244	3,814,557	4,939,553
Missouri Pacific	Dec.	7,412	4,349,742	353,895	5,204,534	767,914	1,022,004	209,535	2,272,557	276,060	4,551,969	87.5	652,565	463,989	252,665	620,644
	12 mos.	7,436	58,961,531	4,599,601	69,920,180	7,867,478	12,672,277	2,725,218	26,899,238	3,336,142	53,719,381	76.8	16,200,799	12,313,503	8,511,961	16,809,458
Gulf Coast Lines	Dec.	1,030	518,775	35,259	604,583	65,346	118,370	36,306	167,627	40,443	420,289	69.52	184,294	181,138	141,755	52,910
	12 mos.	1,030	7,034,886	441,061	7,984,791	909,567	1,499,515	421,468	2,237,506	530,091	5,580,675	69.89	2,404,116	1,926,851	1,297,596	1,661,000
International-Great Northern	Dec.	1,159	616,057	71,201	783,335	101,563	138,479	28,973	373,331	55,379	702,104	89.63	81,231	50,525	—39,445	—25,720
	12 mos.	1,159	8,305,708	779,180	10,143,611	1,267,833	1,796,612	341,988	4,254,727	608,930	8,348,960	82.31	1,794,651	1,346,994	449,451	2,408,114
San Antonio, Uvalde & Gulf	Dec.	316	53,368	4,245	64,148	18,814	4,815	4,695	21,101	4,675	54,040	84.3	10,108	10,778	—12,780	—40,897
	12 mos.	316	806,446	66,051	950,578	238,424	128,349	54,406	249,130	60,494	725,285	76.3	225,293	178,331	—113,504	—125,375
Mobile & Ohio	Dec.	1,239	481,995	26,608	545,665	89,461	109,762	27,234	260,962	46,496	535,022	98.0	10,643	23,041	—21,030	—138,268
	12 mos.	1,225	7,064,620	280,087	7,851,329	1,184,233	1,511,893	500,912	3,354,230	487,085	7,056,191	89.9	795,138	196,080	—509,802	—318,555
Monongahela	Dec.	177	276,800	815	279,386	16,665	19,535	849	66,246	6,587	109,882	39.3	169,504	162,410	93,143	104,159
	12 mos.	177	3,601,252	10,818	3,634,116	310,778	313,827	12,038	755,565	89,197	1,481,547	40.8	2,152,569	1,964,689	1,142,450	1,263,890
Monongahela Connecting	Dec.	6	.....	.....	31,648	7,984	18,338	45	24,931	2,629	53,927	170.4	—22,279	—28,782	—28,433	5,963
	12 mos.	6	.....	.....	467,293	102,226	188,938	971	303,073	31,524	626,732	134.1	—159,439	—220,416	—220,312	—64,249
Montour	Dec.	57	125,731	.....	127,015	8,738	29,791	1,082	35,770	6,235	81,616	64.3	45,399	37,631	55,220	44,857
	12 mos.	57	1,500,476	.....	1,508,978	139,201	404,046	15,468	344,632	87,379	990,714	65.6	518,264	476,974	691,911	915,766
Nashville, Chattanooga & St. Louis	Dec.	1,203	706,915	75,192	886,112	114,308	171,276	50,747	380,430	55,110	776,529	87.6	109,583	154,375	149,617	19,873
	12 mos.	1,203	9,250,963	919,630	11,355,116	1,598,448	2,455,855	676,981	4,713,696	656,728	10,151,895	89.4	1,203,221	788,976	715,254	822,215
Nevada Northern	Dec.	165	18,244	1,507	24,112	11,782	4,043	773	8,817	4,204	29,619	122.8	—5,507	—13,260	—8,628	1,320
	12 mos.	165	260,276	19,907	334,358	117,523	50,174	9,348	103,356	45,635	326,036	97.5	8,322	—81,790	—34,223	—227,185
Newburgh & South Shore	Dec.	6	.....	.....	51,837	1,294	15,107	.....	22,315	4,941	43,657	84.2	8,180	6,220	8,127	—3,664
	12 mos.	6	.....	.....	601,756	84,562	203,925	.....	313,678	58,359	660,524	109.8	—58,768	—172,885	—138,741	—53,188
New Orleans Great Northern	Dec.	264	99,049	7,799	110,209	11,330	17,458	11,174	38,790	7,193	85,945	78.0	24,264	19,864	—764	—3,799
	12 mos.	264	1,504,501	94,964	1,653,205	162,105	221,649	146,480	538,735	90,963	1,159,932	70.2	493,273	382,178	110,839	421,029
New Orleans Terminal	Dec.	20	1,974	.....	140,092	11,284	6,349	.....	35,413	980	54,026	38.6	86,066	85,442	62,772	49,366
	12 mos.	20	12,883	.....	1,480,150	121,523	82,294	.....	369,820	14,388	588,025	39.7	892,125	764,065	540,817	542,650
New York Central	Dec.	11,495	15,322,277	5,098,305	23,681,523	1,520,560	5,765,566	509,538	8,479,527	1,108,981	17,733,878	74.9	5,947,645	3,929,334	2,138,497	564,065
	12 mos.	11,509	193,328,131	60,151,921	293,636,140	28,332,355	64,785,705	6,788,435	110,550,770	12,615,284	227,225,558	77.4	66,410,582	36,211,859	20,738,380	28,075,579
Indiana Harbor Belt	Dec.	120	.....	.....	566,355	Cr. 4,535	33,464	3,264	258,481	20,341	320,601	56.6	245,754	208,225	127,991	130,173
	12 mos.	119	.....	.....	7,298,620	560,465	634,464	45,135	2,891,840	240,900	4,523,794	62.	2,774,826	2,247,441	1,527,315	1,526,552
Pittsburgh & Lake Erie	Dec.	235	955,769	51,683	1,040,575	63,851	396,042	18,161	348,622	55,641	884,220	85.0	156,355	58,339	166,734	196,485
	12 mos.	235	11,491,317	659,989	12,521,976	1,001,587	4,445,702	305,827	4,747,774	696,402	11,214,296	89.6	1,307,680	208,610	1,647,097	3,276,312
New York, Chicago & St. Louis	Dec.	1,691	2,067,439	69,816	2,240,585	153,555	362,902	97,787	858,486	112,315	1,588,504	70.9	652,081	540,846	268,538	206,009
	12 mos.	1,694	27,074,976	920,170	29,158,468	3,560,538	4,967,750	1,281,916	10,843,056	1,464,312	22,106,727	75.8	7,051,741	5,072,496	2,141,153	2,542,098
N. Y., New Haven & Hartford	Dec.	2,068	3,151,575	2,064,889	5,973,968	645,382	870,593	81,037	2,215,747	241,518	4,167,788	69.2	1,806,180	1,454,588	943,363	1,469,376
	12 mos.	2,076	40,975,029	24,809,836	74,973,252	9,327,713	11,326,896	1,005,696	26,876,298	2,930,343	52,985,207	70.7	21,988,045	17,155,857	11,243,367	18,657,675

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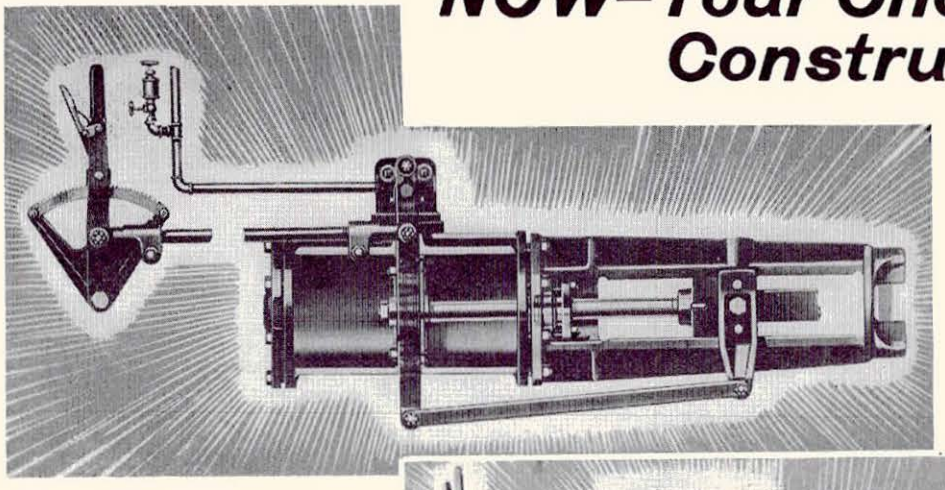
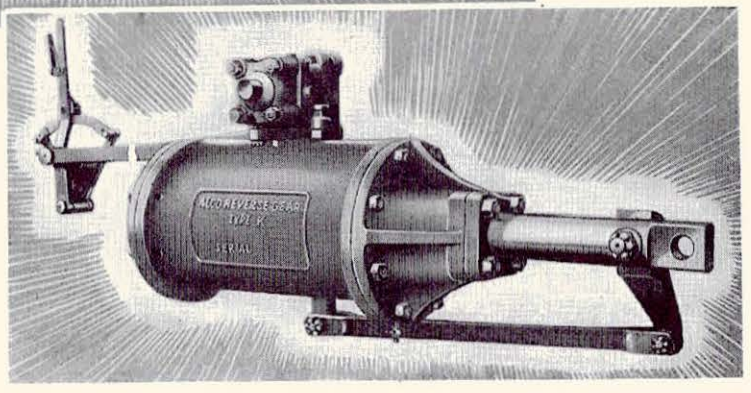
Alco REVERSE GEARS...

NOW—Your Choice of Two Constructions . . .



Type "G" Gear with crosshead and guides.



Type "K" Gear with trunk-piston rod.

RAILWAY men when buying reverse gears can obtain the regular well known Alco Type "G" Gear with its crosshead and guides. Thousands are operating satisfactorily on different roads without a complaint.

Or if they prefer, they can get the new Alco Type "K" Gear equipped with the less expensive trunk-piston rods. This gear is lighter and shorter and is especially adaptable for new or existing power where lower cost, lighter weight and space limitations are important factors. Both gears are powerful, fast, accurate and easy to operate. They possess every requisite for efficiency and economy and have many parts in common.

American Locomotive Company
30 Church Street New York N.Y.

Revenues and Expenses of Railways

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1932—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1931
New York Connecting	Dec.	20	$257,219	.....	$267,240	$10,885	$6,398	.....	29,604	858	47,745	17.9	$219,495	$182,018	$143,944	$90,686
	12 mos.	20	2,434,323	.....	2,558,597	150,721	61,566	.....	354,474	12,031	578,792	22.6	1,979,805	1,535,228	1,064,845	638,182
New York, Ontario & Western	Dec.	568	789,842	$25,083	905,077	56,883	167,060	$10,810	389,442	23,555	644,489	71.2	260,588	223,161	184,029	123,378
	12 mos.	568	8,575,707	613,925	10,571,876	1,220,911	1,825,497	158,898	3,995,992	291,101	7,522,187	71.2	3,049,689	2,501,413	1,860,232	1,769,353
Norfolk & Western	Dec.	2,233	5,398,173	144,226	5,738,980	525,259	850,037	110,338	1,341,167	224,173	3,063,355	53.4	2,675,625	2,044,736	2,251,556	1,511,037
	12 mos.	2,262	58,851,540	1,673,663	62,775,611	6,495,838	11,136,166	1,338,269	15,831,448	2,784,062	37,745,533	60.1	25,030,078	17,815,310	19,161,098	22,977,506
Norfolk Southern	Dec.	932	237,413	7,647	263,443	9,749	60,704	18,466	141,231	22,945	253,095	96.1	10,348	533	—10,144	—35,111
	12 mos.	932	3,867,374	107,151	4,188,799	708,444	765,952	248,854	1,840,121	255,659	3,819,010	91.2	369,789	—121,110	—270,501	338,109
Northern Pacific	Dec.	6,735	2,768,813	313,189	3,474,488	121,659	1,000,442	151,503	1,500,120	267,427	3,091,920	89.	382,568	247,696	500,613	1,103,468
	12 mos.	6,735	38,789,246	3,648,156	47,084,176	5,736,210	11,481,244	1,904,494	18,566,526	3,120,933	41,433,179	88.	5,650,997	—1,049,567	1,990,389	6,801,417
Northwestern Pacific	Dec.	441	96,586	75,084	197,842	40,961	41,066	5,184	133,452	13,652	233,857	118.2	—36,015	—56,483	—67,277	—120,823
	12 mos.	441	1,738,518	1,086,230	3,176,592	504,792	608,847	59,505	1,706,504	180,133	3,057,203	96.2	119,389	—200,737	—346,714	—341,963
Oklahoma City-Ada-Atoka	Dec.	132	19,172	524	21,023	10,063	1,116	699	10,367	1,245	23,615	112.3	—2,592	—6,414	—13,295	—9,998
	12 mos.	132	346,790	5,553	375,079	92,235	23,994	10,815	135,783	19,561	282,502	75.3	92,577	43,551	—43,838	—11,494
Pennsylvania Railroad	Dec.	10,897	17,497,465	4,555,107	24,862,484	2,442,247	5,822,869	556,752	9,637,267	1,295,641	20,066,450	80.7	4,796,034	3,361,700	2,303,784	2,265,161
	12 mos.	10,897	235,347,937	59,738,931	331,393,458	26,457,504	65,274,608	7,228,350	122,648,843	16,593,005	242,011,603	73.0	89,381,855	61,075,198	49,132,038	51,055,806
Long Island	Dec.	399	506,612	1,414,030	2,052,774	114,376	331,595	10,736	899,418	53,275	1,409,403	68.7	643,371	490,706	315,902	322,337
	12 mos.	399	6,694,563	19,951,035	28,220,076	2,073,391	3,866,903	160,896	11,724,214	670,773	18,497,385	65.5	9,722,691	7,236,012	5,045,925	7,217,786
Peoria & Pekin Union	Dec.	17	12,373	.....	75,190	8,297	8,860	1,976	37,452	11,412	67,997	90.4	7,193	—6,057	12,247	—550
	12 mos.	17	120,984	Dr. 3	863,640	100,491	93,031	23,149	407,938	110,712	735,321	85.1	128,319	—45,836	219,564	188,730
Pere Marquette	Dec.	2,320	1,745,248	62,964	1,910,091	141,674	434,983	56,138	716,899	90,182	1,446,753	75.7	463,338	337,709	180,999	85,491
	12 mos.	2,314	19,258,067	871,897	21,461,277	2,781,046	4,831,296	735,422	8,576,430	1,180,038	18,189,896	84.8	3,271,381	1,671,494	325,472	1,284,565
Pittsburg & Shawmut	Dec.	102	72,641	472	73,839	4,989	28,724	1,291	18,596	6,469	60,069	81.4	13,770	13,691	14,242	13,960
	12 mos.	102	797,603	6,833	814,463	105,412	273,676	17,714	209,384	54,873	660,812	81.1	153,651	142,103	129,328	240,603
Pittsburgh & West Virgina	Dec.	138	162,265	1	177,300	14,562	45,302	13,589	36,818	12,819	129,980	73.3	47,320	53,215	71,057	49,230
	12 mos.	138	2,068,601	853	2,239,821	230,962	633,681	164,950	457,375	169,085	1,739,949	77.7	499,872	368,188	619,018	625,021
Pittsburg, Shawmut & Northern	Dec.	197	77,242	273	80,173	19,207	31,720	1,266	30,230	6,752	89,175	111.2	—9,002	—9,678	—14,763	4,658
	12 mos.	197	904,363	2,975	935,591	208,555	235,426	17,940	361,984	79,747	903,652	96.6	31,939	3,489	—45,515	182,964
Reading	Dec.	1,461	3,819,610	290,404	4,383,974	252,628	859,912	73,562	1,628,730	210,688	3,042,870	69.4	1,341,104	1,119,495	1,084,946	1,338,506
	12 mos.	1,460	44,577,648	3,368,996	51,806,374	4,270,016	10,676,670	912,494	20,416,989	2,296,826	38,804,169	74.9	13,002,205	11,404,621	11,086,616	8,994,703
Atlantic City	Dec.	168	81,177	33,875	123,926	19,112	15,673	2,294	105,812	7,267	150,247	121.2	—26,321	—59,067	—63,631	—102,348
	12 mos.	164	860,570	974,621	1,970,952	256,700	210,279	37,756	1,445,459	50,493	2,002,302	101.6	—31,350	—492,624	—569,205	—637,823
Richmond, Fredericksburg & Potomac	Dec.	117	290,393	139,158	549,894	35,446	82,215	7,702	186,368	28,785	347,376	63.2	202,518	205,038	158,814	145,614
	12 mos.	117	3,507,341	1,538,695	6,306,559	564,305	1,266,400	106,436	2,511,898	363,766	4,931,939	78.2	1,374,620	1,050,412	564,255	1,167,742
Rutland	Dec.	413	173,546	30,127	270,621	31,679	71,348	10,594	135,225	16,382	246,938	91.2	23,683	12,367	15,976	—5,547
	12 mos.	413	2,413,541	470,853	3,870,106	679,219	778,080	128,860	1,638,223	171,745	3,363,500	86.9	506,606	257,755	306,711	254,242
St. Louis-San Francisco	Dec.	5,266	2,371,132	261,324	2,933,204	395,195	803,508	92,334	1,160,629	141,397	2,610,237	89.0	322,967	73,655	64,653	160,783
	12 mos.	5,266	33,994,748	3,122,098	40,712,215	5,584,212	9,116,008	1,174,175	14,456,139	1,964,827	32,461,521	79.7	8,250,694	4,573,462	4,050,973	9,902,423
Ft. Worth & Rio Grande	Dec.	233	26,184	1,200	32,820	17,955	12,986	2,842	24,065	4,154	61,243	186.6	—28,423	—31,761	—38,338	—47,253
	12 mos.	233	382,486	18,272	472,303	228,683	149,183	32,758	287,704	46,425	743,557	157.4	—271,254	—319,716	—406,885	—362,669
St. Louis, San Francisco & Texas	Dec.	262	80,483	650	83,993	34,507	20,783	4,925	39,522	6,686	106,382	126.7	—22,389	—24,942	—52,269	—47,460
	12 mos.	262	995,368	7,683	1,046,184	246,768	228,560	61,434	474,996	87,870	1,099,485	105.1	—53,301	—102,394	—449,275	—280,813
St. Louis Southwestern Lines	Dec.	1,913	837,707	23,781	915,066	134,682	173,604	78,530	371,284	41,756	803,984	87.9	111,082	33,744	—12,483	300,978
	12 mos.	1,913	11,563,003	236,034	12,554,433	1,838,052	2,117,995	975,275	4,562,257	961,734	10,535,231	83.9	2,019,202	1,030,493	—186,791	2,607,346
San Diego & Arizona	Dec.	155	10,299	1,747	14,038	172,873	8,107	1,966	11,115	6,273	200,518	1,428.4	—186,480	—189,742	—190,433	—12,507
	12 mos.	155	296,922	41,096	360,179	434,067	107,586	23,891	162,787	56,137	788,782	219.0	—428,603	—475,026	—472,342	—864
Seaboard Air Line	Dec.	4,388	2,150,341	270,683	2,652,929	531,405	569,987	83,686	945,975	138,542	2,274,694	85.7	378,235	252,360	128,028	60,267
	12 mos.	4,424	24,936,536	2,748,288	30,740,335	5,136,818	6,788,509	1,656,859	11,814,510	1,696,157	27,386,854	89.1	3,353,481	1,010,307	208,830	2,578,649
Southern Railway	Dec.	6,667	4,674,129	761,333	6,046,177	572,276	1,007,963	108,949	2,260,763	263,334	4,249,662	70.3	1,796,515	1,491,451	1,362,409	349,800
	12 mos.	6,708	58,232,480	8,108,268	72,986,542	10,390,253	16,802,044	1,881,273	28,024,509	3,292,602	60,865,040	83.4	12,121,502	6,081,631	4,406,269	8,281,106
Alabama Great Southern	Dec.	315	211,170	48,379	294,069	Cr. 19,819	72,368	8,405	120,181	15,697	198,859	67.6	95,210	89,487	88,048	66,336
	12 mos.	315	3,185,511	526,064	4,090,649	640,659	1,244,525	130,989	1,531,962	201,934	3,783,412	92.5	307,237	—108,161	—125,808	355,769
Cinn., New Orleans & Tex. Pac.	Dec.	337	659,159	69,839	789,255	38,945	260,046	9,826	228,036	40,060	580,857	73.6	208,398	195,737	192,706	263,828
	12 mos.	337	8,682,399	763,457	10,126,102	1,321,142	2,728,990	287,175	2,949,157	510,426	7,851,083	77.5	2,275,019	1,654,264	1,737,111	2,046,108
Georgia Southern & Florida	Dec.	397	94,886	21,422	135,169	17,907	29,665	1,543	44,516	2,457	98,014	72.5	37,155	47,462	49,408	66,382
	12 mos.	397	1,425,832	257,571	1,876,618	348,631	493,572	21,235	653,112	28,154	1,574,239	83.9	302,379	127,798	205,525	201,111

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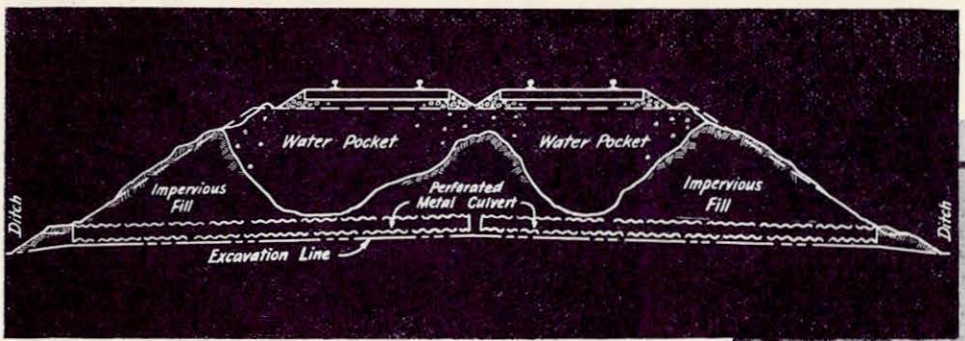
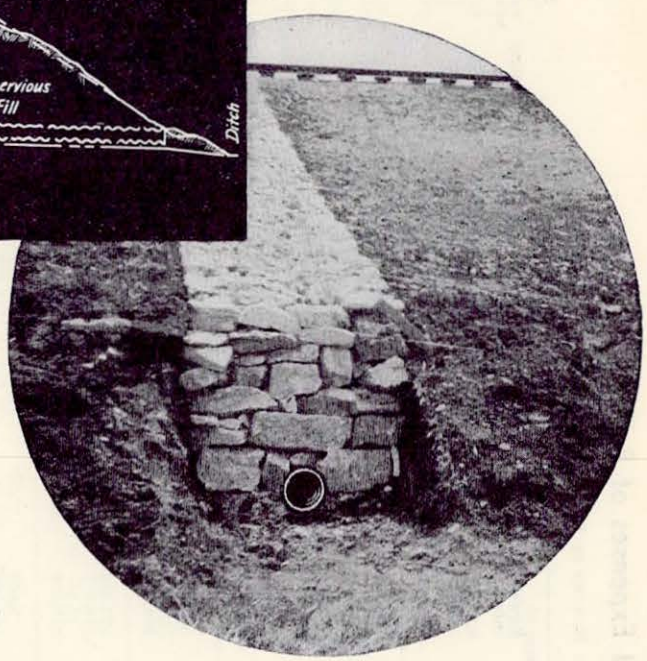
DRAIN WATER POCKETS IN FILLS WITH TONCAN IRON CULVERTS





METHOD OF DRAINING WATER POCKETS IN FILLS . . . By Using Perforated Metal Culvert . . . "One-Man" Riprap as Back-Fill Material . . .

Toncan Iron Culverts play a vital part in the drainage of water pockets in fills—those depressions in the roadbed which, filled with a plastic mass of ballast, earth and water, grow in depth and size under the continual churning of traffic.

The first notice of a water pocket comes when the track needs constant lifting and tamping every few days. Later, bulges appear at the toe of the ballast on the shoulder of the fill. Large pockets containing much water will cause the sides of the fill to cave and slide, and the toe of the fill to creep outward.

The most effective remedy is the installation of rock drains. A trench, 4 to 8 feet wide, carried on a grade of 4 to 6 per cent is dug at right angles to the track from the toe of the fill through and below the lowest point of the pocket. Toncan Iron Perforated Culvert is laid at the bottom of the trench on a bed of coarse stone, and the trench backfilled with "one-man" riprap—large stone at the bottom and graded upward.

Good engineering practice deserves the best in culverts—culverts that are structurally sound, and long-lasting. That's why your culvert specification should read Toncan Iron—the alloy of refined iron, copper and molybdenum with a resistance to rust that ranks first among the ferrous metals after the stainless irons and steels.

Suggestions to combat specific drainage difficulties will be sent upon receipt of full information and sketches outlining conditions.

TONCAN CULVERT MANUFACTURERS' ASSOCIATION
YOUNGSTOWN • OHIO

Revenues and Expenses of Railways

MONTH OF DECEMBER AND TWELVE MONTHS OF CALENDAR YEAR 1932—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of—Way and structures	Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1931
New Orleans & Northeastern	Dec.	204	$97,757	$20,664	$133,018	$10,779	$27,361	$4,648	$54,782	$9,975	$108,921	81.9	$24,097	$1,168	—$10,970	$13,956
	12 mos.	204	1,536,822	260,489	1,960,873	336,291	542,016	76,695	788,157	123,670	1,887,607	96.3	73,266	—293,051	—415,740	—349,157
Northern Alabama	Dec.	99	43,403	1,199	46,211	1,544	1,488	598	14,954	2,179	20,763	44.9	25,448	25,391	20,555	12,557
	12 mos.	99	454,567	12,737	486,613	114,397	16,803	12,519	177,648	25,091	346,456	71.2	140,157	88,905	—60,209	—61,551
Southern Pacific	Dec.	9,101	4,646,637	1,479,809	7,118,126	726,658	1,277,163	272,182	3,007,305	531,397	5,995,595	84.2	1,122,531	291,353	103,275	332,857
	12 mos.	9,103	78,038,122	18,450,895	107,162,148	11,625,948	18,915,414	3,457,007	39,835,695	6,582,130	82,645,456	77.1	24,516,692	12,575,856	7,779,319	19,672,456
So. Pac. Steamship Lines	Dec.	....	284,437	9,552	310,968	16,421	53,538	16,845	199,895	22,097	308,796	99.3	2,172	1,456	1,324	—15,987
	12 mos.	....	3,947,602	268,636	4,419,305	182,222	1,251,624	211,465	3,277,755	312,047	5,235,113	118.7	—815,808	—829,092	—830,076	—726,377
Texas & New Orleans	Dec.	4,600	1,752,213	253,562	2,289,372	400,922	500,115	120,780	849,376	217,958	2,092,707	91.4	196,665	167,452	2,658	31,300
	12 mos.	4,613	24,012,221	3,180,949	31,015,687	5,108,496	6,303,578	1,504,520	11,575,431	2,688,782	27,322,392	88.1	3,693,295	823,068	—1,343,061	3,018,288
Spokane, Portland & Seattle	Dec.	552	231,742	29,981	302,744	30,289	60,920	9,303	156,719	21,671	279,821	92.4	22,923	—42,407	—60,565	71,146
	12 mos.	553	3,951,940	418,346	4,867,498	591,502	735,775	125,522	1,831,301	260,517	3,554,52[illegible]	73.0	1,312,976	409,708	235,187	918,449
Tennessee Central	Dec.	295	163,063	4,971	177,104	18,363	21,706	6,130	61,508	11,643	119,316	67.4	57,788	53,449	35,702	28,265
	12 mos.	295	1,718,507	55,195	1,873,225	293,315	271,509	76,320	688,842	126,375	1,455,162	77.7	418,063	366,598	211,984	258,588
Terminal R. R. Assn. of St. Louis	Dec.	55	.....	.....	432,756	56,859	28,890	3,349	229,459	22,594	343,523	79.4	89,233	—31,983	42,299	93,402
	12 mos.	55	.....	.....	5,653,267	741,203	374,889	45,524	2,795,793	228,401	4,216,042	74.6	1,437,225	365,182	1,196,822	1,800,340
Texas & Pacific	Dec.	1,950	1,286,420	202,548	1,726,412	131,094	302,280	63,657	530,057	106,930	1,142,343	66.2	584,069	563,140	507,848	448,291
	12 mos.	1,950	16,511,722	2,297,841	21,339,398	2,046,834	3,794,637	814,819	6,727,261	1,292,812	14,869,530	69.7	6,469,868	5,257,749	3,871,848	5,870,317
Texas-Mexican	Dec.	162	38,509	830	44,091	7,486	13,127	2,870	4,440	7,273	35,136	79.7	8,955	11,828	8,594	—4,497
	12 mos.	162	576,498	9,744	653,130	121,141	139,310	36,889	254,084	80,395	630,014	96.5	23,116	—31,366	—67,218	—143,727
Toledo, Peoria & Western	Dec.	239	107,879	33	109,880	17,371	9,648	14,029	31,453	7,599	80,100	72.9	29,780	25,373	16,662	—135
	12 mos.	239	1,473,621	437	1,497,341	336,185	163,668	153,845	459,730	111,427	1,224,855	81.8	272,486	230,593	110,015	146,372
Toledo Terminal	Dec.	28	.....	.....	67,799	8,861	12,487	477	33,396	14,595	69,816	103.0	—2,017	—4,311	7,743	1,123
	12 mos.	28	.....	.....	755,762	68,177	137,125	5,890	348,979	67,728	627,865	83.1	127,897	3,444	170,837	296,563
Union R. R. of Penna.	Dec.	45	.....	.....	145,957	23,446	181,609	131	83,982	23,476	312,644	214.2	—166,687	—172,964	—158,181	—20,347
	12 mos.	45	.....	.....	1,948,951	531,056	1,220,569	1,715	1,107,885	178,947	3,040,172	156.0	—1,091,221	—1,170,768	—905,852	851,812
Union Pacific	Dec.	3,768	3,537,118	418,618	4,503,865	49,706	876,201	116,700	1,575,995	270,872	2,957,668	65.7	1,546,197	1,516,745	1,323,228	2,086,629
	12 mos.	3,768	53,725,448	6,047,632	66,141,146	4,872,556	12,395,781	1,505,762	20,348,663	3,454,611	43,510,308	65.8	22,630,838	18,372,028	15,012,306	19,760,956
Oregon Short Line	Dec.	2,504	1,359,600	110,730	1,568,442	113,061	225,041	34,549	584,910	86,454	1,057,440	67.4	511,002	282,154	206,396	351,775
	12 mos.	2,505	17,460,337	1,367,216	20,381,597	2,151,624	2,740,204	471,158	6,833,610	1,193,351	13,677,731	67.1	6,703,866	3,745,406	2,699,868	3,407,026
Oregon-Wash. R. R. & Nav. Co.	Dec.	2,316	696,774	110,861	912,080	104,058	141,269	49,986	461,038	88,994	850,253	93.2	61,827	—27,872	—108,866	210,844
	12 mos.	2,336	10,374,509	1,160,250	13,106,594	1,811,156	1,931,229	657,895	5,861,165	1,130,477	11,480,009	87.6	1,626,585	—101,397	—1,370,302	146,969
Los Angeles & Salt Lake	Dec.	1,245	865,915	123,828	1,085,885	85,487	173,314	61,514	401,255	58,719	808,235	74.4	277,650	187,304	70,707	120,775
	12 mos.	1,248	12,098,107	1,839,179	15,183,060	1,404,975	2,151,115	630,218	4,964,524	776,962	10,315,069	67.9	4,867,991	3,208,460	1,670,666	1,387,480
St. Joseph & Grand Island	Dec.	258	153,611	2,403	163,947	17,719	20,367	2,185	60,468	11,660	112,399	68.6	51,548	57,379	34,718	29,852
	12 mos.	258	2,147,627	33,893	2,290,387	272,139	281,854	29,379	781,610	165,356	1,530,338	66.8	760,049	642,194	374,692	400,346
Utah	Dec.	111	185,309	.....	186,032	478	28,473	470	35,553	1,242	66,216	35.6	119,816	97,844	80,228	90,064
	12 mos.	111	1,152,567	.....	1,156,308	128,369	285,467	4,692	252,115	53,130	722,186	62.4	434,122	327,012	172,346	214,884
Virginian	Dec.	608	1,167,191	5,577	1,226,327	82,111	197,229	14,542	222,270	35,499	551,570	45.0	674,757	524,746	622,903	550,310
	12 mos.	608	12,143,705	72,378	12,818,969	1,256,614	2,408,029	191,343	2,547,562	382,424	6,769,015	52.8	6,049,954	4,394,820	5,196,092	6,345,611
Wabash	Dec.	2,488	2,569,817	225,362	3,036,919	139,052	541,823	137,141	1,274,811	144,372	2,246,713	74.0	790,206	663,673	344,604	—235,004
	12 mos.	2,520	32,466,114	2,546,732	37,785,633	4,602,832	6,255,128	1,824,757	15,991,915	1,847,901	30,684,901	81.2	7,100,732	4,692,397	524,669	—366,995
Ann Arbor	Dec.	293	201,732	3,081	211,683	25,222	44,879	11,048	106,696	10,138	197,203	93.2	14,480	3,433	—12,578	—39,571
	12 mos.	293	2,962,313	40,928	3,116,589	398,711	615,719	153,276	1,368,322	134,716	2,670,393	85.7	446,196	249,268	31,755	22,643
Western Maryland	Dec.	891	1,024,975	7,011	1,062,547	116,267	173,165	31,984	267,535	33,235	624,314	58.8	438,233	369,913	379,189	347,339
	12 mos.	891	11,383,066	91,172	12,081,684	1,419,684	2,110,688	436,119	3,149,717	451,584	7,521,365	62.3	4,560,319	3,776,999	3,714,864	4,343,199
Western Pacific	Dec.	1,163	627,172	14,693	666,696	128,110	117,629	54,323	317,766	40,494	672,101	100.8	—5,405	—67,604	—71,984	—13,709
	12 mos.	1,116	9,656,224	382,055	10,768,713	1,331,849	1,866,730	698,967	4,331,602	449,866	9,031,922	83.9	1,736,791	736,687	518,117	263,270
Wheeling & Lake Erie	Dec.	511	708,490	2,673	747,115	53,584	177,005	30,119	218,183	34,935	513,610	68.7	233,505	243,161	232,504	45,664
	12 mos.	511	8,037,590	36,178	8,536,235	877,474	2,180,367	352,551	2,718,526	339,786	6,468,267	75.8	2,067,968	1,138,307	903,170	1,186,801
Wichita Falls & Southern	Dec.	203	51,406	66	53,104	11,060	6,157	1,652	13,671	3,112	35,652	66.97	17,452	32,137	29,985	19,043
	12 mos.	203	580,635	588	603,478	121,674	88,170	21,446	159,632	37,985	428,907	71.07	174,571	143,370	102,764	77,769

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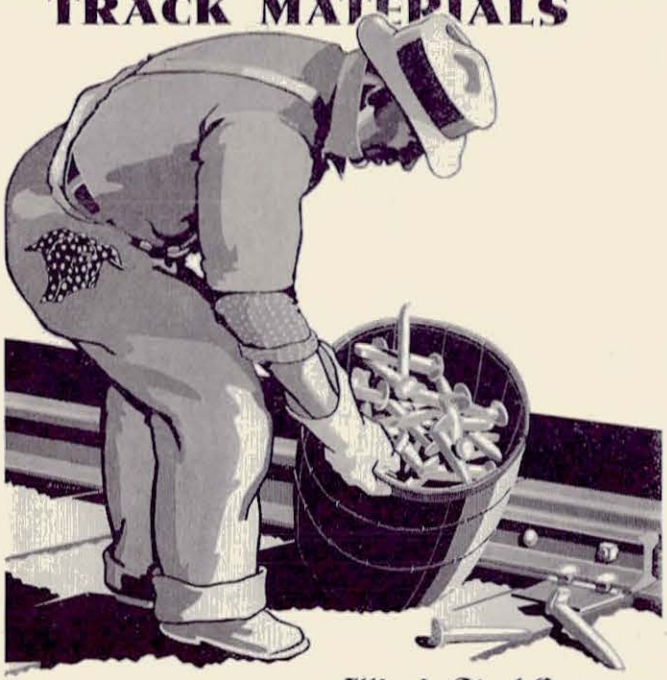

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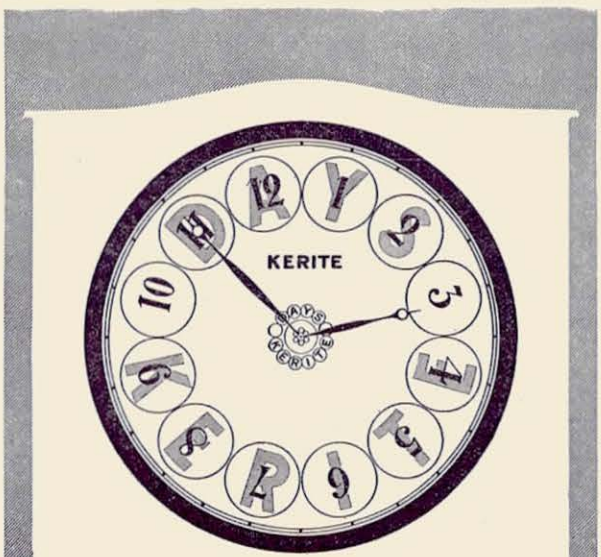

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page 18

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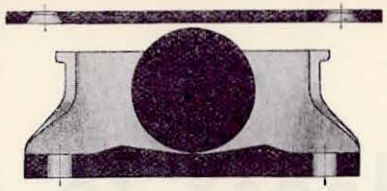

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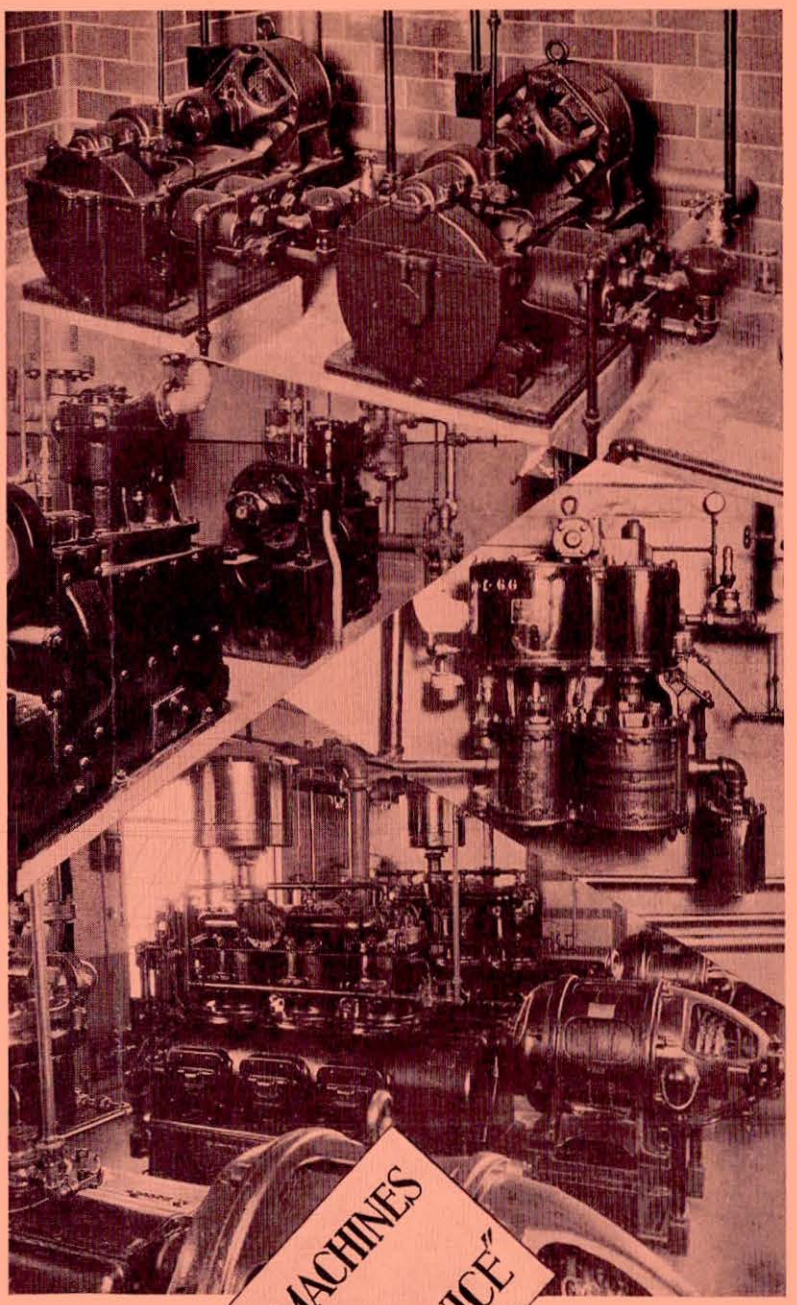

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